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News Print Paper Price Conferences Continue

Caucus of Manufacturers Held In Montreal, Que., Understood to Have Been Prelude to General Conference of Producers and Newspaper Publishers In New York—Publicity Given To Situation Is Making It Political Issue of Major Importance—Premier Taschereau Emphasizes His Uncompromising Position

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., December 23, 1929.—Except that the Canadian press grenerally are strongly supporting the action of the leading Canadian news print manufacturers in their plans for increasing the price of their commodity to $60 per ton, there have been no new developments in the price situation during the past week. At the same time a great deal has been going on behind the scenes. For instance, A. R. Graustein, president of the International Pulp and Paper Company, has been in Montreal conferring with officials of the Canadian subsidiaries of his organization, and also with executives of the large Canadian concerns. The caucus among paper producers here is understood to have been a prelude to a general conference in New York.

Meanwhile the publicity which has been given to the situation is making it a political issue of major importance. The disposition seems to be to blame the Provincial Governments for allowing the pulpwood resources of the Dominion to be exploited upon unremunerative terms and in a wasteful and extravagant manner. It is claimed that immature trees that should not be cut in this generation are being sold for the ridiculous pittance of four cents each, to be manufactured into paper that is being sold at a price so low that, were adequate depreciation charges off, there would be an actual loss shown in its manufacture.

Stirred by public opinion, Premier Taschereau is losing no opportunity to emphasize the uncompromising position which he has taken up. Thus during the week he has again declared himself on the situation, as follows: "Let me make it clear; we do not intend to legislate on the matter. We will not resort to any harsh means. But we have the right and the duty to see that our national domain is not depleted and sold to our neighbors at prices which would ruin this Province, and we will not shirk our responsibility. We know that the federal government of Canada will lend us its co-operation and we rely on it."

It should be emphasized that official utterances like the above are to a great extent due to the governing authorities being attacked with much bitterness for having permitted and even encouraged the over-expansion of the news print industry with the attendant price-cutting and wasteful destruction of immature trees.

At the same time the news print companies themselves are held not to have been without blame, and it is noticeably that public comment is now showing a tendency to criticize very strongly the lack of understanding and of cohesion that they have shown. It is held that they should long ago have got together with the paper committees of the publishers, associations and have laid their cards on the table showing the definite need for price increase. Instead of that they have allowed a situation to a level that places the publishers under what the latter consider to be a grievance and that makes it appear that they have been forced into action by the provincial government.

There has been a popular tendency to blame the International Paper Company for having brought about the price-cutting situation, and for being the real stumbling block in the settlement of the disagreements. The *Montreal Herald*, however, has given prominence to a letter from a correspondent, signing himself "Inside Information," which puts another aspect on affairs. This letter, which evidently comes from some well-informed sources, says:

"To begin with, the Quebec government and, to some extent, the Ontario government were lured into granting more licenses for cutting pulp wood than the demand for paper justified. The last of these grants to Lord Rothermere threatened to swamp the market. The owners of the Canadian mills up to about six years ago were partially to blame for allowing the governments to overdo the business without protest. The outlook for the existing mills grew gloomy. The excessive competition and prospective additions depressed the shares to a figure dangerously near the vanishing point. The dilemma of this over-capacity created what might be termed a panic. All sorts of impossible remedies were suggested. The situation became more than merely alarming, an actual crisis had arrived. At this juncture some Canadian mills, to avert what seemed like an overawing calamity reached out for contracts at cut prices. They contracted with Mr. Hearst for large tonnage. When Mr. Graustein found this out he was naturally furious. The contracting millers subsequently found out it was injudicious to contract with Hearst so they repudiated. Then it was Hearst's turn to be furious. With Hearst resenting the repudiation and Graustein resenting the contract the way was naturally open for two injured ones to get together to hit back so they made, or profess to have made, a contract between them at a price which would naturally force the Canadian mills to sell at ruinous prices. With half the Canadian mills already crippled by low prices and a gloomy outlook their shares sank to a very low point. It looks as if the way was now open for interested Americans to join with interested Canadians to capture the lame ducks and so control the market. There is not a shadow of doubt this is the game. If it succeeds, we will shortly be looking back with regret to the good old times when we had sixty dollar paper. We will have it at a price so high as to make the present price abnormally cheap."

Consolidated Sulphite Mill Addition Started

Extensive Building Program Under Way to Take Care of Production Changes to Better Grades of Ground Wood Papers—Developments Will Ensure Increased Capacity for Sulphite Department—Marathon Elects Officers for Forthcoming Year

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 16, 1929.—Enlargement of the sulphite mill of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., has been started. This is but a continuation of a very extensive building program during the past year or more in order to take care of changes in production to better grades of ground wood papers and the rapid growth which the company has enjoyed.

These additions will be built in three sections, each to be of concrete, brick and steel. The first will be 40 by 42 feet, with a height of 34 feet; the second 41 by 40 feet and 36 feet high; the third 50 by 30, and 110 feet high. Announcement has not been made as yet concerning the equipment which is to be installed. The changes will mean increased capacity for the sulphite department.

A minor building project completed by the Consolidated company is a garage 36 by 123 feet in size to house trucks and passenger automobiles.

D. C. Everest Re-Elected

D. C. Everest, eminently known in the paper industry, continues for another year as vice president and general manager of the Marathon Paper Mills Company, Rothschild, Wis., as a result of the company's annual meeting last week. The officers are: Cyrus C. Yawkey, president; G. S. Gaylord, vice president; B. F. Wilson, treasurer; P. M. Wilson, secretary; A. M. VanDouser, assistant secretary and treasurer. The remaining directors are: Ben Alexander, W. H. Bissell, C. S. Gilbert, M. P. McCullough and C. J. Winton.

Announcement has been made by the Marathon company that its carton division at Menasha, Wis., will move back from Chicago to Menasha several of its departments which a year ago were transferred to the former city. The planning, credit and billing departments will be among those returned to the mill offices because of greater convenience in operation. The sales division will not be affected and will continue to function from the offices in the Wrigley Building, Chicago.

Wisconsin's Forest Problems Discussed

Progress again was made last week in the co-operative effort which has been put forth to solve Wisconsin's timber situation. A gathering was held at Oshkosh, Wis., which not only was important because it dealt with the prevention of forest fires, but because the Wisconsin Conservation Commission, and the lumber and paper mill owners sat together for the first time on record at a round table discussion on these matters. One of the important proposals submitted by A. L. Osborn for the timber owners was the levying of a tax of one cent an acre by the state in each fire prevention district, the entire proceeds to be used for fire vigilance and fighting any fires which occur.

Other recommendations include the removal of slash when logging, and that the state have this in control on areas 100 feet back on each side of public highways. A more rigid control of fire burning permits, and laws preventing the throwing away of lighted matches, cigarette stubs and the like were suggested also. This conference probably will result in future legislation which will place enforcement power with the conservation commission.

Further state reports on forestry matters indicate that 18,825 acres of national forest land was planted with new trees last year by the government forestry force. Nurseries are to be enlarged so that the acreage can be increased greatly next year

A study of timber cutting on state owned lands also has been made by foresters in a recent conference at Madison, Wis. The idea of selective cutting was not encouraged, because foresters point out that trees previously hampered in growth do not do well after the larger ones are removed. The policy of the future probably will be that of clearing the lands entirely and then replanting.

News of the Industry

Midwinter evenings will be utilized at Appleton, Wis., for safety conferences, according to plans which are afoot by Marion Smith, in charge of foreman training at the Appleton Vocational School. All mill employes whose positions will enable them to promote safety will be enrolled. One section will be devoted exclusively to paper and pulp mill problems.

Indications are that George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., will be serving his community for the third time as mayor. Papers are in circulation by his employes and others for his nomination for the spring election. Mr. Mead has not indicated whether he will run.

R. M. Sensenbrenner, secretary of the George A. Whiting Paper Company, Menasha, Wis., has been honored with election as president of the Kiwanis club of his city.

Mills of the Combined Locks Paper Company and the Thilmany Pulp and Paper Company, were shut for about five hours recently when a motorist knocked down a power pole and cut off the supply of current.

The Sawyer Paper Company, wholesalers of Neenah, Wis., have moved into their new building erected recently. The location gives them a large modern office and warehouse and sidetrack facilities in addition.

Considerable interest has been shown in a new paper known as "Cullusuede," produced from kraft by the Mosinee Paper Mills Company, Mosinee, Wis. It has a striking similarity to suede leather, and a finish very much resembling that product. It has been made up in many colors and has met the tests of high class printing. The paper will be pushed mostly in the market for covers, programs and the like.

Much Hope Based on Mersey Mill

The inauguration of the news print mill of the Mersey Paper Company at Liverpool, N. B., is the basis of much comment in that Province, and it is clear that high hopes are entertained of its contributing much to the industrial prosperity of the Province.

A. T. Weldon, vice-president in charge of traffic on the Canadian National Railways, states in an interview that the completion of the mill was the most important industrial development which had taken place in the Province in the past 25 or 30 years; in fact, it was only exceeded in magnitude by the iron and steel and kindred operations at Sydney.

Dalhousie Mill Soon to Start

It is expected that the new mill of the International Company at Dalhousie, N. B., will start producing news print early next month. The initial plans called for the installation of three 125-ton machines in the plant, and later on it is proposed to add further units. The mill is receiving its power supply from the Saint John River Paper Company's development at Grand Falls. The transmission line from the falls to the mill, over 200 miles in length, has already been completed.

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3527

Paper Demand Declines Slightly in Chicago

Local Distributors of Standard Grades of Paper Anticipate Quiet Period of Trading Until After Inventories Are Completed—Fine Paper Jobbers Enjoyed Eminently Satisfactory Last Quarter—Paper Board Dealers Optimistic Over Outlook

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 23, 1929.—While retail Christmas buying in Chicago was heavy right during the past week, manufacturers representatives and paper jobbers already had begun to feel a slackening in demand, following completion of all Christmas orders. A quiet period from now until after inventories is expected by the Chicago paper merchants. When inventories are taken it expected that stocks will be in a good position for more than ordinary business throughout the first quarter of 1930.

Some nervousness is reported in news print, due primarily to an advance in price. Basic conditions are good. The book market is steady, with prices firm. Fine paper jobbers have nothing to complain about with the last quarter of the year said to be entirely satisfactory. Tissues are fair, though expected to be quiet now at least for a few weeks. The demand for board has fallen off but there are few board dealers who are not optimistic about 1930. Wrapping papers are characterized by firm prices with a steady demand continuing. The slackening in board has had its effect on the lower grades of waste paper although the better grades continue to be strong. Production in ground wood papers has slowed up and the market is reported to be stiffening.

Paperboard Industries Program

A great deal of interest is already in evidence over the next meeting of the Paperboard Industries Association, scheduled for the Drake Hotel, Chicago, January 21, 22 and 23. It will be the first meeting of the new year and the first under the supervision of the new corps of officers including President Hugh Strange and vice presidents H D. Schmidt, J. H. McLeod and A. C. Osborn. The January meeting will also see the first action based on the resolution passed at the November meeting which placed the Trade Practice Administration in another division of the Paperboard Industries Association, with I. W. McLean in charge. A complete schedule of meetings will be issued from the Chicago offices of the Association within a very short time.

One of the feature events of the past week was the appearance of Dr. George Craig Stewart, chaplain of the Salesmen's Association of the Paper Industry, at the Monday noon, December 16, meeting of the Chicago Division. Dr. Stewart had an audience of thirty salesmen to entertain and is reported to have more than fulfilled this obligation. The chaplain of the association delivered a Christmas message which dwelt primarily on the necessity of giving gifts that were really wanted no matter what sacrifice, within reason, might be necessary to do so. He lauded the true Christmas spirit and, all in all, gave the salesmen a message they will not soon forget. His message will probably result in a more well filled Christmas stocking for many a paper salesman's wife, sister or sweetheart.

From the Butler Paper Company comes the information that H. C. Tracy, buyer of envelopes, bonds, ledgers, writings, etc., for the Butler organization, is to become affiliated with the American Envelope Company after the first of the year. He will be located at the American Envelope offices in West Carrollton, Ohio, as vice president of the concern. Mr. Tracy has been with the Butler Paper Company for nearly seventeen years and, in that time, has gained a great deal of valuable knowledge concerning the products manufactured by his new connection.

News print representatives in Chicago were interested in the recent report that showed an increase of 18.5 per cent in national advertising in newspapers in 50 leading cities for the first nine months of 1929 as compared with the same period in 1928. This same report showed an increase of almost 40,000,000 lines of advertising in newspapers of 22 leading cities for the first nine months of 1929, a 4.4 per cent increase over the same period in 1928.

Half a hundred issues of Westvaco Inspirations for Printers have now been published by the West Virginia Pulp and Paper Company. They continue to be popular reading for many of the Chicago advertising and printing trades. No. 50 tells of fashions and phases in the progress of American advertising magazines, books and printing. There is a one page discussion on "The Simplicity of the European Poster as an influence on Pre-war Advertising Design." Another page deals with color in advertising. Still a third relates some of the oddities and novelties in copy and illustration from modern advertising. Real educational messages in the "Westvaco's."

From their executive offices at 421 North Western avenue comes the information that the Vortex Manufacturing Company is to henceforth be known as the Vortex Cup Company. The name is much more descriptive of the character of their business—the manufacture of paper cups.

The Maxwell Paper Company, of Franklin, Ohio, manufacturer of high-grade sulphite and offset papers, has announced the appointment of the Midland Paper Company as a distributor of their newest product "Maxwell Bond." Maxwell Bond is a watermarked sheet of sulphite bond paper in the reasonably priced water marked sulphite field. The Midland Paper Company will carry a complete stock in white and colors. An unusually large stock will be carried at the mill in three finishes—Wove, Linen and Ripple, in all popular sizes and weights and in ten colors.

Paper attracting favorable comment at this time in Chicago printing and advertising circles includes Oxford Folding Coated, distributed in Chicago by Bermingham & Prosser; Radiance Bond, Resource Bond and Valiant Bond, made by the Gilbert Paper Company and distributed here by Bradner-Smith Paper Company; Artesian Bond made by Whiting-Plover, of Stevens Point, Wis., and distributed by the Midland Paper Company; and Resolute Ledger, made by the Neenah Paper Company and distributed in Chicago by the Parker, Thomas & Tucker Paper Company.

U. S. Envelope Co. Changes

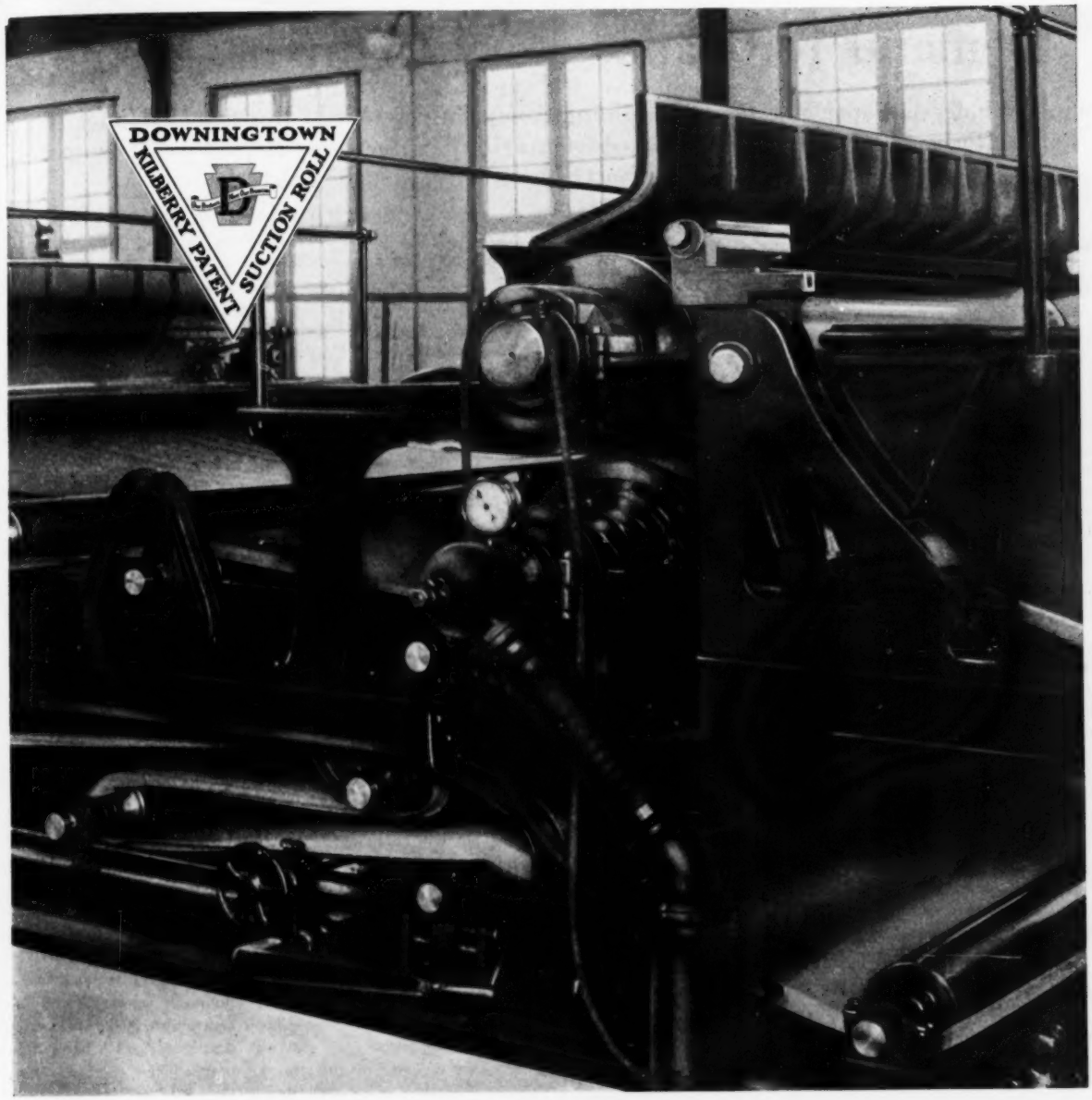
SPRINGFIELD, Mass., December 23, 1929.—At a special meeting of the board of directors of the United States Envelope Company, held in this city December 18 the following executive officers of the corporation were elected:

President, Willard E. Swift of Worcester, Massachusetts, to fill the vacancy occasioned by the decease of James Logan.

First vice president and general manager, Eldon V. Johnson of Springfield, to fill the vacancy occasioned by Mr. Swift, former first vice president being elected to the presidency, and of the decease of James Logan, formerly the general manager.

Third vice president and assistant general manager: Robert L. Allison of Springfield, who fills the vacancy caused by the election of Eldon V. Johnson, formerly third vice president and assistant general manager, to the office of first vice president and general manager.

William O. Day of Springfield, remains as treasurer and was elected a member of the executive committee, a position he formerly occupied. Ernest M. Whitcomb of Amherst, Mass., remains as second vice President.



Did you ever consider that suction rolls have other advantages, aside from increasing speed, production and decreasing the steam consumption per ton of paper? Suction Couch Rolls lengthen the service life of wires, simplify wire changes and eliminate many breaks at wet end due to the absence of top couch and guard board. Suction Press Rolls prolong the service life of felts, thru the use of old second and third press felts at first press. All suction rolls give these benefits, but the designs of different rolls vary, thus resulting in a difference in operation and performance. Simplicity, minimum parts requiring attention and all adjustments made while machine is running. These are some of the exclusive features of the Kilberry Patent Suction Roll. May we send you our Bulletin No. 103?

DOWNINGTOWN MFG. CO.
DOWNINGTOWN, PA., U. S. A.

Demand for Paper Very Light in Toronto

While Wholesale Paper Merchants Are Doing Comparitively Little Business, Holiday Trading Has Proved Better Than Anticipated—Ontario Manufacturers Report Total Output Materially Affected By Short Season—Board Mills Fairly Active

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 23, 1929.—Aside from filling last minute rush orders for the present year the wholesale paper trade in Ontario is doing comparatively little business. This condition is inevitable at this season of the year and is no indication as to the trend of the paper market. Most wholesalers have had a good Christmas season and while it was slow in opening up it has panned out better than expected. When the stock market panic hit business there was an immediate drop in sales volume of both fine and coarse paper, but when the smoke had cleared away it was decided that the outlook was not so black as early signs indicated. It did cause, however, a policy of deferred buying in paper circles, but the temporary loss of business was soon overtaken and December saw a return to normal business with a satisfactory volume of sales up to Christmas week and a little earlier. Most of the distributors are inclined to think that the final summing up of the year's business will show satisfactory sales, although they are hardly expected to reach last year's record. Pretty much the same condition exists in the paper box section of the paper industry.

Manufacturers report that Christmas business was decidedly slow in opening up. The season thus being short the total output was waterially affected. Business conditions generally this last fall have not been conducive to manufacturing activities in paper box circles and it is stated in most quarters that this year's total business will fall considerably below that of last year, which was, of course, exceptionally good. However, the carton industry is on a sound basis and the outlook for trade for the coming year is good.

Board mills have sustained their activities at a fairly high level and with a general understanding between the manufacturing companies, the industry has been enabled to stabilize conditions of sale and distribution so that each of the companies got their fair share of the business going. In practically all lines of paper distribution there has been a rush of small orders over the Christmas season which is going to put a favorable aspect on the yearly statements of the wholesalers when they are issued early in the New Year.

Northern Safety Group Meets

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, has returned to Toronto after attending a meeting of the northern group of safety departments of paper mills, comprising plants at Iroquois Falls, Sault Ste. Marie, Sturgeon Falls, Espanola and Kapuskasing. The meeting, which was held at Iroquois Falls, covered two days of intensive work and study of accident prevention in the paper mills, and was presided over by Edward Silver, local manager of the Abitibi Power and Paper Company. The gathering also included a visit of inspection to the mill at the Falls. The program was an interesting and instructive one and brought forth discussion on safety matters in the mills from all angles which brought forth much useful information and the decision to hold another group meeting in Northern Ontario at an early date. Practically all the paper companies in the north were represented at the meeting and the Ontario Government sent up officials of the sanitary branch, including Chief Inspector W. Miller, and several district local inspectors. During the discussions the value of group meetings was stressed. These, it was stated, were necessary in a province as large as Ontario. Suggestions made by these groups will be placed before the directors of the Ontario Pulp and Paper Makers' Safety Association by Mr. Costigane, the secretary-engineer, and future policy based on the information and suggestions forthcoming from the group meetings. It was pointed out that, with one or two exceptions, the management of all the paper mills in the province were now backing the work of the association vigorously.

Abitibi Head Office Nears Completion

Early in the New Year the Abitibi Power and Paper Company will take possession of their handsome new executive offices which it has constructed on University Avenue, Toronto, just north of the new Provincial Paper head offices, between Queen and Dundas streets. The building is two stories and ample space has made it possible to provide attractive quarters for the staff. The change from Montreal as the chief executive offices was probably due to the fact that with the absorption of the Spanish River mills and Fort William, together with Abitibi's own operations in Northern Ontario, the province of Ontario predominated so far as mill operations were concerned. Toronto will be known as the business office of the company, with Iroquois Falls, Ont., where the Abitibi mills are located, remaining the head office. There will still be maintained an office of the company in the Canada Cement Building at Montreal.

Thompson-Heyland Co.'s Pulpwood Operations

The Thompson-Heyland Lumber Company, Ltd., Toronto, have contracted to handle about 140,000 cords of pulpwood for delivery to paper mills during the coming year. The demand for pulpwood has considerably improved of late and the mills are taking larger quantities of sotck. The Toronto company will conduct a new operation this year about ten miles north east of Sault Ste. Marie, where two million feet of birch will be cut and 25,000 ties taken out. The company has completed its activities at South River, Ont., but will carry on at Tory Hill and Harcourt, in Haliburton County, during 1930. The firm consider that the outlook for the pulpwood market for the coming year is very promising.

Provincial Will Take Out 40,000 Cords

Provincial Paper, Ltd., Port Arthur, Ont., of which C. A. Gardner is woods manager, are operating three large company camps this season. They expect to take out in the neighborhood of 40,000 cords of pulpwood and have very favorable operating conditions. Several early frosts and subsequent heavy snowfalls gives the company the opportunity of starting hauling early. This will commence at the end of the present month. The company has not bought as much pulpwood from settlers this year as formerly but expect to receive about 15,000 cords by rail from settlers in the Thunder Bay district and as far west as Dinoric and Quibell. Mr. Gardner has been associated with Provincial Paper, Ltd., for twelve years and all that time has had charge of the woods operations of the company. It was in 1917 they started their logging operation in the Abitibi district. Prior to entering on his present post Mr. Gardner was logging superintendent of the Whalen interests in and around Port Arthur, being employed with that firm for nearly ten years.

Big Pulp Shipments From Clay Belt

According to word from Sault Ste. Marie, Ont., the coming season will see the shipment of over 160,000 cords of pulpwood from the clay belt, over the Algoma Central Railway, a small amount coming to the Sault and the remainder going to mills in old Ontario and in the United States. Of this amount possibly half is wood cut by settlers in the process of clearing their farms. The Northern Paper Mills, Ltd., is cutting pulpwood back of Coppell, a short distance south of Hearst. The company has about 400

No matter what kind of paper you make, you can make more of it, or make it better--or both--with Bird Screens. Bird Machine Company, South Walpole, Massachusetts.

men in its camps and its product is shipped to its mills at Green Bay, Wis. The Newago company conducts an even larger operation at Hale, its wood being shipped to Appleton. From Oba the Hawk Lake Lumber Co. ships wood to Thorold, Ont., and North Tonawanda, N. Y., while still another operator ships wood to Munising.

Thunder Bay Mill to Re-open

W. J. Hussey, general manager of the Thunder Bay Paper Company, Port Arthur, Ont., stated this week that the big mill would reopen on January 1 with its full force of men, after being shut down since December 1. The Current River groundwood mill opened a few days ago with a force of 125 to 130 men, an increase of 75 men over previous operations. When the Thunder Bay plant reopens with the beginning of the New Year the full complement of 375 men will be employed at the two plants. Mr. Hussey anticipates continuous operation of the various plants.

Notes and Jottings of the Trade

Among the officials of the Abitibi Power and Paper Company to visit Toronto during the past few days were F. L. Mitchell, assistant manager of operations, and H. L. Sanborn, chief electrical and hydraulic engineer. D. G. Calvert, manager of the Fort William plant, was also a caller at the Toronto offices of the company.

H. R. Telfer, of the Detroit Sulphite Pulp and Paper Company, Detroit, Mich., was a caller on a section of the Toronto paper trade during the past week.

T. A. Flockhart, of the Photo Printing and Engraving Company, Bound Brook, N. J., and Mayor of Sommerville, N. J., was greeted in Toronto last week by a number of the paper trade.

Alliance Paper Mills, Ltd., are contemplating the installation of new dryers for the new cylinder paper machine at their Lincoln Division at Marritton, Ont. When these are in operation the machine, it is claimed, will be unexcelled for the production of the grades of paper in which it has been decided to specialize.

Toronto paper interests are interested in the news of the combine of Phillips & Bremer, Ontario and Dominion land surveyors of Port Arthur, with James W. Sewall, consulting forester, of Old Town, Maine. The firm will stand as one of the largest timber cruising and forestry businesses.

The first half of the Toronto Carton Council's bowling tournament wound up on December 17 when the "Book Lined" team were announced as the winners. There was a turkey roll on the same night and in all about 30 prizes were given out to the paper box bowlers.

The executive committee of the Toronto Carton Council is now engaged in arranging a program for the annual meeting to be held early in the new year. Considerable discussion is heard as to the likely place of meeting for the annual convention of the Canadian Paper Box Manufacturers' Association which was held last year in Toronto. Both Ottawa and Quebec have been mentioned as possible gathering places for next year but the matter has not yet been decided. An announcement on the question will be forthcoming in a few weeks time.

Frank H. Houghton, a former well-known paper salesman in Toronto, has been promoted to be sales manager of the Canada Printing Ink Company, Ltd., with which company he has been associated for the past seven years. Mr. Houghton started into the paper game with the Canada Paper Company, later going to the Sinclair-Valentine Company, ink manufacturers, and eventually linking up with the Canada Printing Ink Company. He is widely and favorably known in paper and printing circles in Toronto and throughout the province.

Price Index for Pulp and Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 26, 1929.—The November wholesale price index number for paper and pulp was 87.9 compared with 87.9 for October and 88.8 for November of last year taking 1926 at 100 according to the Department of Labor.

Obituary

Webster E. Brown

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 23, 1929.—Announcement is made of the death of Webster E. Brown, of Rhinelander, Wis. He was the founder and first president of the Rhinelander Paper Company. His death occurred at Chicago, where he was taken ill with pneumonia. High honors were paid to him by the entire city of Rhinelander at his funeral, because he was the founder of the city. He platted it from the forests and was its first mayor. Mr. Brown was instrumental in having the Chicago and Northwestern and Soo railroads built north into the unsettled portions of Wisconsin. He also organized the Employers Mutual Liability Company, of Wausau, Wis., a corporation in which paper mill owners took a leading part because of the need of protection under the workmen's compensation act enacted a number of years ago. He held many fraternal offices and was the founder of the Congregational church of Rhinelander. Burial took place at Rhinelander.

William G. McKenzie

William G. McKenzie, president of the Blauvelt-Wiley Paper Manufacturing Company, died on Monday, December 16, after a sudden attack of appendicitis. Mr. McKenzie was also president of the Standard Bleachery Company, at Carlton Hill, N. J. He is survived by his wife and two children. Services were held at his home at Rutherford, N. J., on Thursday, December 19.

Boston Paper Market Steady

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 23, 1929.—Christmas cheer pervades the paper market here generally, dealers in both fine and coarse lines having a satisfactory business in many cases. Business is not falling off so early in fine paper as last year and some houses have had a big holiday trade. Some houses had a better December than a year ago. In some lines of kraft the demand has slackened to some extent. The outlook for the coming year appears favorable. The demand for specialties has held up well.

The box board situation continues unsatisfactory, with prices at the same levels. Some orders are being placed, but not for large quantities of material.

Sales are slow in the paper stock market, although there has been a slight strengthening in roofing rags. Some large consumers do not care to buy except at lower than prevailing figures and are out of the market for March first shipment. Some cancellations have taken place. Apparently, according to talk in the trade, consumers feel that a softening in prices will take place and prefer to delay their purchasing until later. Some grades of stock have declined in value. Foreign manila rope, formerly quotable at 4.37½ at 4.50, has been marked down to a flat 4.25. Domestic manila rope, in which a range of 4.50 to 4.75 prevailed, is now at 4.50. Scrap burlap has declined from 1.37½ at 1.50 to 1.35.

Dryden Paper Issues Good Report

Good results are shown in the first statement of the Dryden Paper Company since the lifting of the receivership in December, 1928. Operating profits are shown at $338,490, miscellaneous revenue at $13,3342, making a total income of $351,823. After deduction of $100,118 bond and debenture interest there is shown a net profit for the year of $251,704, from which amount there is further deducted $100,000 provisiion for depreciation and depletion leaving a surplus of $151,704 to be carried forward.

Though not much has been heard lately of the company's merger possibilities, there still exists in well-informed circles a belief that Dryden's absorption by Canada Power and Paper is one of the less remote developments in the paper group.

Established 1886

Season's Greetings

For the closer friendship and increasingly pleasanter relationship which the past year has brought us from our many friends in the trade, we are thankful. For the numerous favors so gladly extended by them, we are grateful. And our expressions of good-will carry to all our appreciation of the good they have bestowed on us.

Again we say a Happy and Prosperous New Year to all.

M. GOTTESMAN & COMPANY

—Incorporated—

CENTRAL NATIONAL BANK BUILDING
Broadway at 40th Street
New York, N. Y.
U. S. A.

European Offices:
Gustav Adolfstorg 14,
Stockholm, Sweden.

Pennsylvania Mills Operating Near Capacity

Paper Manufacturers State Present Schedule Will Be Maintained Until End of Year—Little Ordering Ahead Experienced at Present Time and Outlook for Future Is Indefinite—More Activity Expected When Industry Gains Confidence

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., December 23, 1929.—Last minute demands for Christmas supplies kept the Philadelphia trade busy to the last minute. Though ordering has been small and frequent there has been a larger volume assembled in the bulk of paper consumed in belated holiday ordering as shoppers rush about seeking gifts that have been postponed until the last hours of the shopping season, and which will give the distributors opportunity to clean out fairly well before inventory days are at hand. The demand for fiber containers, corrugated products, and other shipping cases, has been well maintained, as gifts require this sort of boxing and packing.

Paper manufacturers state that present operations scheduled in fine paper and other mills in this section will be maintained until the close of the year but that there is little ordering ahead at this time and no definite outlook can be forecasted for the mills. This applied to mills in the immediate vicinity of Philadelphia. Operations on present schedule are near capacity in the fine paper mills, but in the board mills and among the producers of wrappings and specialties there is slowing down of production to from 60 to 70 per cent of regular working days. Many mills state that the inventory and holiday season will be given over to plant overhauling in preparation for the new year's business and for the necessary repairs that must be made to mechanical units. However, despite the present encouraging operations of the mills, the outlook is not as gratifying as might be expected when present orders will cover the next few weeks of the current year only with few advance purchases placed among local manufacturers at this time for the coming year. It is believed that there will be more active mill operation in the early year as the industrial world gains confidence.

Following the advance in the price of kraft made earlier in the month the trade has been notified that there will be a similar rise in the values of paper bags as nationally prominent converters state that their products will cost 5 per cent more. This price advance was made effective December 20 when Philadelphia headquarters of the leading bag manufacturers stated the new quotations on future deliveries. This is the third advance of 5 per cent made on bags this year. There has been no change as yet in the smaller converting plants of the local territory where price concessions have been effective all the season despite firmer prices on raw materials.

Chicago Paper Stock Houses Enter Local Field

Two prominent paper stock wholesalers allied in business interests have acquired the properties of the Edorr Paper Stock Company, located at Water and Wolf streets, as Quaker City headquarters. They are the Pioneer Paper Stock Company and the Chicago Mills Paper Stock Company, both to enter the local field as Eastern Divisions for the companies which are affiliated with the Container Corporation of America. The local offices and warehouses will be devoted to buying, collecting, packing and shipping of waste paper for the Container Corporation of America, Philadelphia branch and mills located in the Manayunk district. The home offices of thes concerns are located in Chicago. Under the new regime the Edorr Paper Stock Company business acquisitions will be managed by Edward Orr, who will be general manager of the Eastern Division of both companies. Mr. Orr is the former owner of the Edorr Company which has been established for two years and for eight years was with Infante Brothers paper stock dealers of this city. He has been associated with the local paper stock trade since 1917.

Philadelphia Retail Waste Merchants Elect

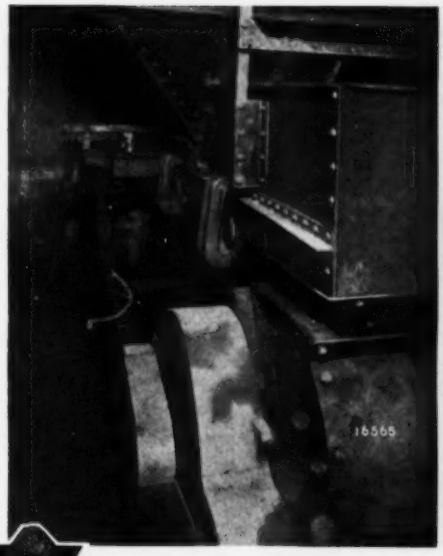
Following a banquet which took place at the Majestic Hotel, the Philadelphia Retail Waste Merchants held an election of officers. The following were elected to serve for the coming year which is the second of the organization of the retail groups of paper stock, rag merchants, and other waste trade branches:—President, Samuel Parris, head of the firm bearing his name; Vice President, Samuel Halpern, Halpern Brothers; Secretary, Henry Rosenbaum, H. P. & H. T. Wilson Company; Treasurer, Louis Bornstein, L. Bornstein Company; and Financial Secretary, Philip Haas. There were three hundred waste firms represented among the retailers at the banquet, which was the first annual gathering of the body since its foundation last winter. At this social meeting they heard impromptu talks by the officials and by municipal authorities on sanitation and the proper collection of paper and rag stocks by the members in conformity with the laws and regulations of the City of Philadelphia.

Hans Lagerloef Acquires Valuable Stamp Collection

What is probably one of the most extensive private stamp collections in the world is being mounted in geographical order in leather bound volumes here for Hans Lagerloef, of the Lagerloef Trading Company, Inc., 52 Vanderbilt Avenue, New York, and who lives in Weehawken, N. J. The work of mounting the stamps has been undertaken by Christian L. Dull, noted Philadelphia artist. He has been engaged in the work since February, 1928, and plans to conclude the task within three years. The stamps have been purchased by the owner on world tours and semi-annual business trips to Europe. Among those most prized are two Mauritius stamps, only a few of which are to be found in other State or private collections. Mr. Lagerloef presented a collection valued at $10,000 to the Postal Museum in Stockholm, Sweden, many years ago. The present collection will remain in the family. Four hundred volumes already have been completed by the local artist. Many of these stamps have for a background some historical scene relative to the growth or early struggles of the countries which they represent. The task of mounting the stamps is tedious as the stamps of each country are arranged according to chronological order and as many represent old European countries where stamps have been altered according to changes in sovereign powers and many are so faded that it is hard to distinguish the date and period and this adds to the difficulties of compiling them for future heritage. When completed Mr. Lagerloef will be in possession of one of the most noted stamp collections in the world, and of great value. Mr. Lagerloef is the brother of Thelma Lagerloef, noted Swedish writer and poetess.

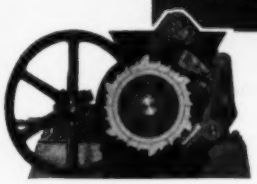
Paper and Cordage Association To Have Christmas Feast

The December session of the Philadelphia Paper and Cordage Association to be held at the Adelphia Hotel on Friday, will be given over to the election of officers and then turned into a gala occasion for Christmas cheer and sociability during the luncheon hour. There will be no business transacted other than the election and after partaking of a seasonable repast the time will be given to the enjoyment of choral singing, revelry and the distribution of gifts among the membership, now totaling thirty firms from the Quaker City industry. It is the plan to increase this membership fifteen more in the coming year. The officers who were elected at the Christmas session were: President, George

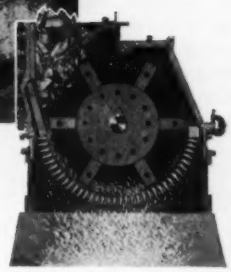


A Jeffrey Single Roll Crusher in the steam plant of a Pulp Mill

A Jeffrey Shredder in a Pulp Mill shredding wood screenings.



Cross section of a Jeffrey Single Roll Crusher



Cross section of a Jeffrey Type A Shredder.

Reduction Units for

Coal Preparation

In your boiler room, uniformly sized coal contributes generously to efficient stoker operation—greater heating value is obtained from crushed coal than from slack. A Jeffrey Single Roller Crusher will assure you of a uniform product from your coal—in a single operation.

In construction, the Jeffrey Crusher has many refinements—a positive acting safety device protects the crusher against damage from tramp iron and other foreign material found in cars of coal—its easily adjustable breaker plate permits various size products — the strong and massive crusher frame is well fitted to the severe service for which it was built.

Wood Screenings

Slivers, knots, and rejected tailings from your screens represent a real value in the manufacture of coarse paper. In the pulp mill pictured above at the right, a Jeffrey Shredder is used to shred slivers and knots which formerly were discarded into the river as waste—a daily saving of $72.00 was realized.

At a moderate cost, a Jeffrey Shredder may be installed for this purpose. The savings made will soon pay for the machine.

Simply let us know that you are interested and we will be glad to tell you how the waste slivers and knots from your pulpwood can be converted into a profit.

Catalog No. 359-H describing Jeffrey Single Crushers, contains many practical suggestions about stoker economy. Catalog No. 460-C tells all about Jeffrey Shredders. A copy of either or both will be sent on request.

The Jeffrey Manufacturing Company

931-99 North Fourth St., Columbus, Ohio

New York, Buffalo, Rochester, N. Y., Philadelphia, Pittsburgh, Utica, Boston, Scranton, Pa., Cincinnati, Cleveland, Detroit, Chicago, Charleston, W. Va., Milwaukee, St. Louis, Denver, Houston, Salt Lake City, Birmingham

Jeffrey Manufacturing Co. Ltd., of Canada, Head Office & Works: Montreal—Branch Office: Toronto

JEFFREY

MATERIAL HANDLING EQUIPMENT

Jeffrey Products for Pulp & Paper Mills

Elevators
Conveyors
Portable Loaders
Coal and Ashes Handling Equipment
Skip Hoists
Chains and Attachments
Sprocket Wheels—Gears
Crushers—Pulverizers
Locomotives
Ventilation Fans

K Hooper, Hooper Paper and Twine Company, who was re-elected to serve a second term; Vice President, Frederick I. Bower, Groveton Paper Company and representating the Wortendyke Manufacturing Company and other mills; Treasurer, Frederick S. Balch, Schuylkill Paper Company also re-elected; and Secretary, William V. Edkin, of the Morice Jute Mills.

Garrett-Buchanan Co. Opens New Department

There has been inaugurated in the business of the Garrett-Buchanan Company 14-20 South 6th street, a new department which will be devoted to the distribution of roofing and building papers, with a complete line of these grades to be carried in stock. The new department will be connected with the Wrapping Paper Division under management of Joseph Weaver and will have at its head Clark P. Moore, who formerly was for seven years secretary and mill manager of the Morocto Roofing Company and who for twelve years was affiliated with the Felt Mills of Rowlandville, Md., operating every machine in the mills during his association with their operation and business history. The Felt Mills in Rowlandville were destroyed by fire a few years ago. In the newly opened department there will be carried a complete line of roofing papers, builders boards and other building papers manufactured by Bird & Son, of East Walpole, Mass., extensive producers of these papers. These lines will be carried in the warehouses in their entirety, with the roofing, sheathing, roll roofing, roofing felts, and allied products stocked.

Paul Melchior Joins Garrett-Buchanan Co.

Paul Melchior, who until a few years ago was linked with the Philadelphia trade as an associate of his own business, and was formerly with the Auer & Twitchell Company, has joined the Garrett-Buchanan Company on its sales staff. He will be associated with the wrapping paper department under Manager Joseph Weaver. After leaving the Auer & Twitchell Company he opened his own business as the Melchior Paper Company, later retiring from the paper trade to join the Victor Talking Machine Company. He recently had been sojourning in California and returned here to join the Garrett-Buchanan Company.

Thomas W. Price Co.'s Yuletide Celebration

Following out its customary "open house" celebration of the Yuletide, the Thomas W. Price Company will this year hold its festivities in the new building recently acquired as its sales offices and additional warehouse at 12-14 South 5th street, in the former quarters of Curtis & Bro. There will be the customary Christmas party with buffet service, entertainment and musical program, with the staff joining in the chorals and other features on the program. A huge Christmas tree will be erected on the ground floor with distribution of the gifts made on the Eve of Christmas. Thomas R. Fort, Jr., of the firm, will attend with his son and business associate, Norman Fort, while William Simmons, of the staff, will act as Master of Ceremonies.

Westinghouse Officials to Banquet

Officials of the Westinghouse Electric and Manufacturing Company, were guests of the Foreman's Association of the South Philadelphia Works of that company, at a banquet held at McCallisters Halls, 18th and Spring Garden street, last Thursday. There were over 300 attending. Henry Beck, retiring president, presided. Among officials attending were H. T. Herr, vice president of the Westinghouse Company and J. E. Barkle, works manager of the Philadelphia plant. The new officers of the association are: W. H. Bartolett, president; J. G. Morgan, vice president; W. J. Boston, secretary and treasurer; and C. R. Sturm and F. R. Bartholomew, directors.

Fire at Barrett Mfg. Co. Plant

Flames shooting forty to fifty feet into the air added to the spectacular fire which last week threatened to wipe out the plant of the Barrett Manufacturing Company, makers of roofing felts fire started in the machine used in the process of treating dried and builders papers, Greys Ferry Avenue and 36th street. The fire, started in the machine used in the process of treating dried felts with tar and spread rapidly from the corrugated iron shed in which it orginated to the one story brick building in which large quantities of tar and dried felt are stored. The fire spread so rapidly that 250 workmen were lucky to escape before being engulfed by the flames. Explosions of the tar vats and other inflammable materials in oils and stills containing chemicals used in the manufacture of felts followed continuously as the fire fighters fought the flames. The burnt building is in the center of the large area of buildings used in the Barrett Manufacturing Company's business.

Shell Eastern Petroleum Products to Open in Philadelphia

A Philadelphia distributing station has been acquired for the use of the Shell Eastern Petroleum Products, Inc., by that corporation in the mammoth building and large area of ground at 37th street and Grey's. The property contains four acres of ground and a building, with capacity of 120,000 square feet of space and 800 foot frontage on the Schuylkill River for loading and shipping purposes. The oil products and chemicals manufactured by the Shell Company will be transported here from the Billingsport, N. J. refining plants and distributed to the local territory.

Mathew J. Burns Elected President

[FROM OUR REGULAR CORRESPONDENT]

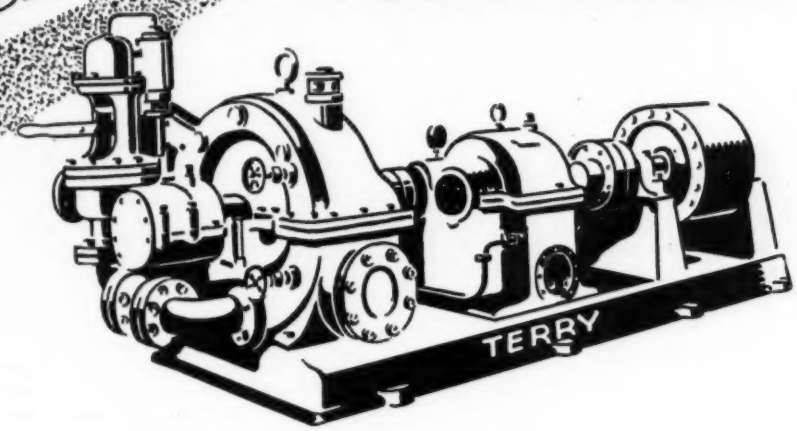
ALBANY, N. Y., December 21, 1929.—Mathew J. Burns was offically declared elected president of the International Brotherhood of Papermakers this week following tabulation of the vote by the canvassing board. His majority was but very slight over Jeremiah Carey in what was conceded the stiffest election ever conducted for the presidency. The canvassing board adjourned late this week after having spent nearly a week in counting and tabulating the vote. Both Messrs. Burns and Carey are well known to the paper industry throughout the entire country and the outcome of the fight for the presidency has been closely watched from the outset. Mr. Burns has been a member of the organization for many years and served as international secretary for a number of terms. In 1927 he was a candidate for the presidency but was defeated by William R. Smith, whose term expires the latter part of this month. Mr. Carey served as president of the organization for nineteen years but was defeated by Matthew Parker, who in turn was defeated by W. R. Smith.

The attempted comeback on the part of Mr. Carey revealed surprising strength and was sufficient at the first election in October when there were three candidates to give him a sufficient lead over Mr. Smith so that a second election was necessary to determine the ruler of the organizaiton for the next two years. Mr. Burns secured most of his votes from the western part of the United States as well as Western Ontario and Manitoba while Niagara Falls, Troy, Holyoke and Thorold also contributed largely to his victory. Mr. Carey polled heavily in Maine, Northern New York and in the Province of Quebec, Shawinigan Falls and Three Rivers. Mr. Burns will assume office early in January. In the contest for the sixth vice presidency E. O. Kelly, of Sault Ste. Marie, was elected over Oscar Benoit, of Shawinigan Falls, by a majority of 800 votes.

W. B. Wheelwright & Associates Formed

The Safeway Sales Corporation has recently been formed by William B. Wheelwright & Associates, 126 Massachusetts Avenue, Boston, Mass., for the purpose of sales and distribution of the Wheelwright Safeway Mailers. These Mailers represent a new idea for the mailing of photographs, display cards, etc. An interesting experience was recently had in connection with the mailing of over 3000 photographs of President Hoover in one of these Safeway Mailers, over 99 per cent of which were received in good condition.

Higher Paper Speeds—Greater Production



Secured by another N.Y. State Mill with the TERRY Paper Machine Drive

By making certain changes on his paper machine, this manufacturer found that he could increase the paper speed 60%. The prime mover, however, was not suitable for driving the machine at this speed, so a thorough investigation was made to determine what the market offered for the conditions, with the result that a Terry Paper Machine Drive was purchased—for it gave:

1. The desired speed increase with resulting greater production.
2. A drive that fitted the requirements, that is, "custom built."
3. High dependability.
4. Efficiency.
5. Uniform speed.
6. A wide speed range—He can still operate at the low speeds if desired.
7. Clean exhaust steam.

And many other advantages.

Ask for bulletin S-89 for complete details

The Terry Steam Turbine Company

TERRY SQUARE, HARTFORD, CONN.
OFFICES IN PRINCIPAL CITIES

Steam Turbines · Gears · Shaft Couplings

T-1042

Canadian Paper Exports Increase

Exports of pulp and paper from Canada in November were valued at $17,952,008, according to the report issued by the Canadian Pulp and Paper Association. This was an increase of $56,000 over the total for October and of $1,100,000 over November, 1928.

Wood-pulp exports for the month were valued at $4,152,432 and exports of paper at $13,799,576, as compared with $3,703,414 and $14,192,737 respectively in the previous month.

Details for the various grades of pulp and paper are as follows:

	November, 1929		November, 1928	
PULP:	Tons	$	Tons	$
Mechanical	26,864	816,190	25,318	691,927
Sulphite bleached	22,598	1,708,096	18,614	1,451,431
Sulphite unbleached	17,843	866,095	18,312	902,562
Sulphate	12,442	708,247	13,132	763,415
Screenings	2,837	53,804	2,349	46,922
	82,584	4,152,432	77,725	3,856,257
PAPER:				
News print	229,141	13,294,287	196,187	12,422,625
Wrapping	1,216	135,651	1,331	148,930
Book (cwts.)	5,793	49,106	9,998	80,459
Writing (cwts.)	236	2,096	17	409
All other	.....	318,436	.....	358,849
	.....	13,799,576	.....	13,011,272

For the eleven months ending November 30, 1929, the total value of plup and paper exported from Canada amounted to $181,466,226 as compared with a total of $174,756,988 for the corresponding months of 1928, an increase for this year of $6,709,238.

Exports of the various grades of pulp and paper for the eleven months are as follows:

	11 months, 1929		11 months, 1928	
PULP:	Tons	$	Tons	$
Mechanical	194,949	5,469,119	183,690	5,010,477
Sulphite bleached	235,341	17,853,114	229,683	17,441,668
Sulphite unbleached	180,598	8,906,559	194,409	9,748,257
Sulphate	125,888	7,371,312	148,416	8,745,192
Screenings	33,087	593,991	28,169	566,553
	769,863	40,194,095	784,367	41,512,147
PAPER:				
News print	2,290,462	135,662,449	1,993,425	127,694,880
Wrapping	13,792	1,505,549	14,587	1,601,611
Book (cwts.)	68,965	587,121	65,367	539,103
Writing (cwts.)	4,170	38,968	4,034	37,786
All other	.....	3,478,044	.....	3,371,461
	.....	141,272,131	.....	133,244,841

Pulpwood exports have been smaller this year than for several years past. The total shipments in the first eleven months of the year amounted to 1,227,879 cords valued at $12,619,783 as compared with 1,482,598 cords valued at $15,805,576 exported in the corresponding months of 1928.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 24, 1929.—The Government Printing Office has received the following bids for 4,800 pounds of 24 x 38 x 32, white paraffin paper; Cauthorne Paper Company, at 12.3 cents per pound; Barton, Duer & Koch Paper Company, 14.5 cents; R. P. Andrews Paper Company, 12.19 cents; Whitaker Paper Company, 12.24 cents; Reese & Reese, Inc., 13.02 and 13.67 cents; Walker, Goulard Plehn Company, 11.75 cents; and Nashua Gummed & Coated Paper Company, 12.9 cents.

The following bids were also received for 25,000 sheets of 50 per cent rag, 26½ x 41 laid cover paper; R. P. Andrews Paper Company, at 15 cents per pound; Dobler & Mudge, twenty-nine cents; Reese & Reese, 13.65 cents; Atlantic Paper Company, 14.75 cents; Old Dominion Paper Company, 15 cents; and Barton, Duer & Koch Paper Company, 23.5 cents.

The Government Printing Office has received the following bids for 47,799 pounds of four sizes, 50 per cent rag, white bond paper; Old Dominion Paper Company at 12.82 cents per pound; R. P. Andrews Paper Company, 14.5 cents; Whitaker Paper Company, 12.55 cents; Barton, Duer & Koch Paper Company, 12.95 cents; Virginia Paper Company, 12.69 cents; Whiting Paper Company, 13.75 cents; Dobler & Mudge, 12.89 cents; and Atlantic Paper Company, 12.47 cents.

The following bids were also received for 33,500 pounds of 24 x 38, 124, laid antique book paper; R. P. Andrews Paper Company, at 16.98 cents per pound; American Writing Paper Company, 16 cents; Virginia Paper Company, 15.62 cents; Atlantic Paper Company, 16.7 and 17.4 cents; Barton, Duer & Koch Paper Company, 17 cents; Whitaker Paper Company, 15.73 cents; Old Dominion Paper Company, 15.69 cents; and Allied Paper Mills, 15.5 cents.

Bids were also received as follows for 2,000 pounds of 16 x 21 36, No. 40 white bond paper; Barton, Duer & Koch Paper Company, at 26 cents per pound; Atlantic Paper Company, 25.9 cents; Whiting Paper Company, 25.5 cents; Virginia Paper Company, 29.68 cents; Old Dominion Paper Company, 57 cents; and R. P. Andrews Paper Company, 36 cents.

Building New Power Unit at Spier Falls

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., December 21, 1929.—The new power unit now under construction by the New York Power and Light Corporation at Spier Falls will enable paper manufacturing plants to derive a vast increase in electric power, according to officials. The new addition will raise the capacity of the plant to 100,000 horsepower which is greater than any other generating plant in the state except Niagara. A mammoth water wheel, the largest ever built, will feed the new generator. The wheel will weigh 160 tons and measure 20 feet in diameter. If operated at capacity for 24 hours it will have a capacity sufficient to handle four billion gallons of water. The wheel is being built by the Newport News Shipbuilding Co., in Virginia.

The new hydro-electric generator which the water wheel will serve will have a capacity of 59,000 horsepower. This is being built by the General Electric Company, and will furnish considerable power. The complete generator will weigh 218 tons and will have a diameter of 43 feet. Officials of the company announced that the new addition would be completed in 1930 while other improvements are also planned. The main power plant will undergo remodeling while a new section will also be erected to house equipment.

Bausch & Lomb Issues Unique Booklet

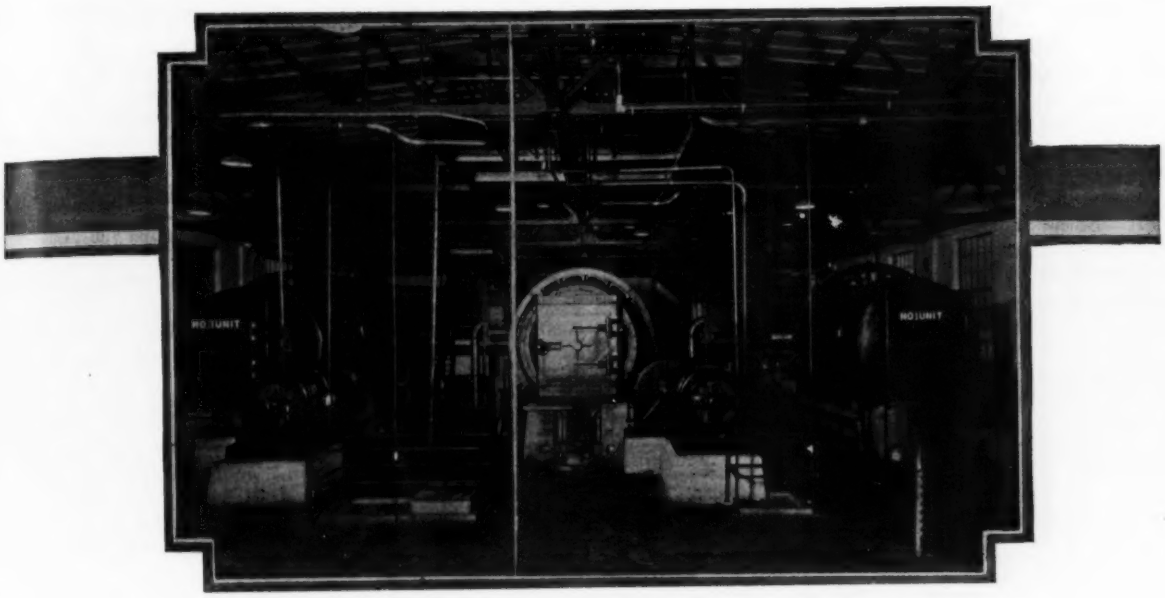
The Bausch & Lomb Optical Company, Rochester, N. Y., has just prepared an interesting and unique booklet entitled Bausch & Lomb Paper-Makers Microscope. Most of the quantity catalogs printed were handled in the conventional way, but a number were specially prepared for individual manufacturers. These were individualized to the extent that both the cover and the envelope were made of a paper produced by the manufacturer addressed and the photomicrograph shown on the cover was actually a picture of the paper employed in making the catalog cover.

The PAPER TRADE JOURNAL has seen many mailing pieces individualized by the printing of the prospect's name on a booklet cover, but never, it is believed, has the idea been carried out to the extent of using the prospect's material and preparing a special photomicrograph for the concern.

Building New Liner for Paper Shipments

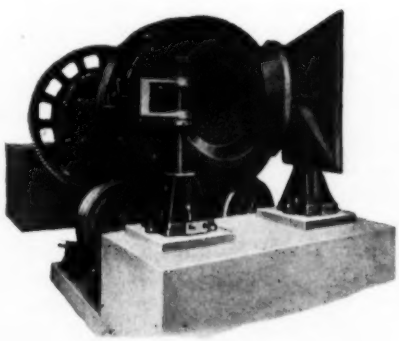
[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., December 21, 1929.—A new ocean liner is being built in England this winter for the paper carrying trade on the St. Lawrence and it will make its initial appearance in the spring. The craft is being equipped with triple expansion engine or 2,000 horsepower each and three boilers for burning either oil or coal. To protect the paper rolls from being damaged during heavy weather the holds will be coiled with steel sparring covered with wood. At the ends special construction has been made to give vertical and horizontal surfaces for easy stowage of paper. The craft will be used principally in the carrying trade on the lower St. Lawrence River. Canadian and English marine architects collaborated in the design.



Three of the Largest Rod Mills Installed *Anywhere*

. . . and by means of these Marcy Mills a prominent paper mill is getting increased capacity, more thorough hydration, a better product



THIS paper company tried out one unit, studied its operation over a period of months, compared costs—and then ordered two more identical units.

This installation of three 7 x 16 Marcy *Open End* Rod Mills emphasizes not only the improvement in beating and hydration that comes about through the use of Marcy Mills but the better control and lower costs that come about through the use of large units. Further particulars will be sent to interested parties.

The MINE and SMELTER SUPPLY COMPANY

225 Broadway, New York Denver

Licensee under the Marcy Rod Mills Patents

Manufactured in Canada by William Hamilton Limited Peterborough, Ontario

New York Trade Jottings

At a special meeting of the stockholders of the American Cyanamid Company, held on December 17, Harry L. Derby was elected a member of the Board of Directors. Mr. Derby is president of The Kalbfleisch Corporation which recently became affiliated with the American Cyanamid Company.

* * *

Fred L. Schenck has rejoined the selling organization of C. B. Hewitt & Bros., Inc., general paper merchants, of 16-24 Ferry Street, New York, and will soon call upon his friends offering a reliable line of paper and boards backed up by a dependable company who consider service and satisfaction all important.

* * *

The St. Regis Paper Company and affiliated corporations have leased the entire 24th floor of the new Lincoln Building in East 42nd street, where will be concentrated all the organization offices, now located at 15 Broad street and in several other down town buildings.

* * *

John J. Griffith old rope dealer, for many years located at the foot of Clinton street, Brooklyn, N. Y., has just completed a concrete reinforced steel fireproof warehouse, which has been fully equipped with modern machinery. The new plant replaces the building which was destroyed by fire several months ago. Mr. Griffith's added facilities will enable him to handle much larger quantities of stock.

* * *

The United States Paper Bag Company, Inc., with offices and factor located at 505-515 Johnson Avenue, Broklyn, N. Y., announce the completion of the installation of high speed bag machines for the manufacture of notion and millinery, serrated edge candy and glassine bags. All of these machines are equipped to do attractive printing in either one or two colors. In addition they carry in stock all the standard sizes of these bags for prompt shipment.

Sylvania Industrial Mill To Start Soon

FREDERICKSBURG, Va., December 23, 1929.—With one production unit complete and machinery installed, the Sylvania Industrial Corporation's million dollar plant will probably begin actual production of the transparent paper used to cover candy boxes, wrap cigars, and for other purposes, about March 1, according to reports given out by officials. About 400 me are employed now in construction work. The general contract for the plant is held by the Hugers-Foulkrod Company, of Philadelphia and the steel work is being done by the McClintick Company, of the same city.

The first unit will consist of six buildings. The dye house, one of the largest buildings, is completed and the machine shop is about finished, and the machinery in place. The remaining buildings are well under way.

F. H. Reichel, formerly general manager of the Sylvania Industrial Corporation, has been made vice-president of the organization, and has supervision here of the work, having moved to this city from New York.

Pacific Board Co. To Build Pulp Mill

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., December 21, 1929.—The Pacific Straw Paper and Board Company of Longview, Wash., on December 10 announced the construction of a wood pulp mill to provide five or six tons of wood pulp daily for the company's products. Previous to this time all of the wood pulp used was purchased from Norway. J. J. Kellum and W. J. Campbell have taken the contract to supply 2000 cords of cottonwood which will be cut on the islands in the Columbia river below Longview and brought to the plant by barge.

Deubener's Shopping Bag To Expand

INDIANAPOLIS, Ind., December 16, 1929.—W. H. Deubener, president of Deubener's Shopping Bag, Inc., 2702 Applegate street, producers of quality paper shopping bags, has announced the purchase of additional manufacturing equipment in preparation for an estimated 40 to 50 per cent. increase in production for the year 1930.

Mr. Deubener said the year 1929 had shown the largest total production in the history of the business, that the demand for the output of the plant exceeded its production capacity.

Mr. Deubener said in his opinion the production and distribution machinery of industry generally throughout the country had not suffered by stock market developments, and if wages could be held at the present high level, assuring maintenance of hte buying and consuming capacity of all classes, business should continue prosperous resulting in general employment and a high level of activity for the year 1930.

Mr. Deubener called attention to the fact that Deubener's Shopping Bag Inc., was one of the recent industries of Indianapolis. The business, which had been operating at St Paul for several ears, was moved to Indianapolis because of the city's advantageous manufacturing situation, and a program of expansion undertaken, including the incorporation of the business which previously had been conducted as a partnership by Mr. Deubener and Lydia Deubener, his wife.

R. Felix Geddes, is Vice president and general manager of the new corporation.

Work of the Import Committee

After four years pendency in the United States Customs Court, a case involving the dutiability of bible paper has been abandoned by a Philadelphia importer. The importer had claimed that the paper was dutiable as printing paper at ¼ cent per pound and 10 per cent, but the customs officials had classified it as Bible paper at 4 cents per pound and 15 per cent. The Import Committee in one of its earlier investigations found this foreign paper competing seriously, because of the low rate of duty then levied, with similar domestic papers, and evidence was provided the Customs officials to justify a higher classification.

Importers are also abandoning many of the cases in which the classification of printing papers was involved, particularly such shipments as were involved in the test cases decided in the spring in which papers not standard news print were held to be dutiable as printing paper. Two Finnish shipments of ground wood book paper are among those recently abandoned by the importers. Other cases in which the Import Committee has been interested and which have been abandoned by the importers include shipments of envelopes made of wrapping paper, and several shipments of boxed stationery held to be subject to additional duty for special finish.

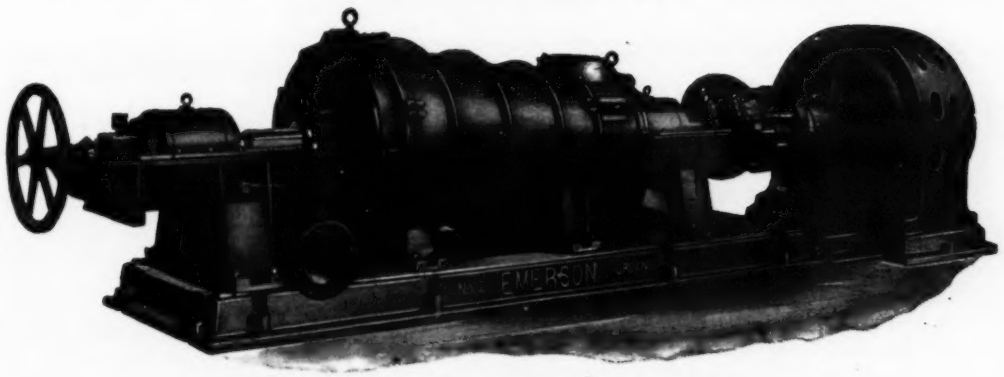
Writing paper claimed by the importer to be dutiable as printing paper was held by New England customs officials to be dutiable as writing or as hand made paper.

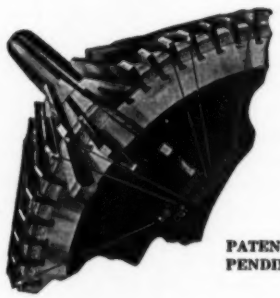
Wall Paper Trade Practice Conference

WASHINGTON, D. C., December 26, 1929.—Wall paper manufacturers representing 90 per cent of the producing end of the business have been authorized to hold a trade practice conference with the Federal Trade Commission in the near future. No definite time or place has been set. Commissioner C. W. Hunt will preside at the conference when held. Most of the companies have their plants in such states as Massachusetts, New York, Pennsylvania, New Jersey, Illinois, Ohio and Indiana.

Among subjects to be discussed at the conference are listed the following: Sales on quality basis; cost accounting; deviation from standards; misbranding; fraud and misrepresentation; defamation of a competitor; imitation of trade marks or trade names; sales without profit; enticement of employees; espionage, and arbitration.

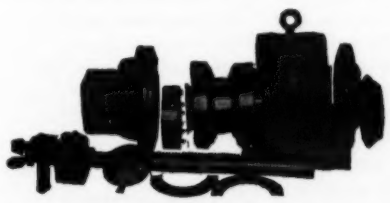
The EMERSON JORDAN
equipped with the
Bolton INVERTED WEDGE Plug





PATENTS PENDING

Showing construction of the Bolton Inverted Wedge Plug. Knives and woods cannot come out. Note Inverted Wedges.



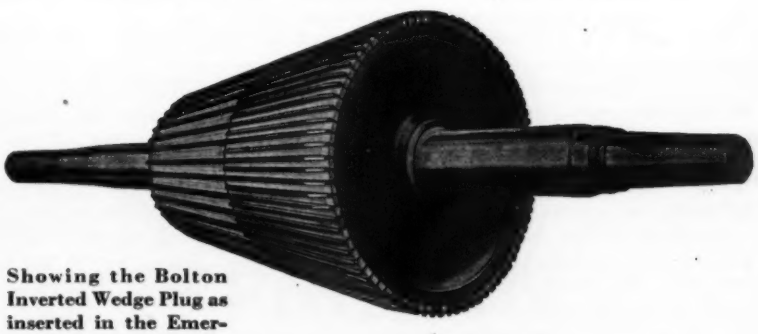
Detail of Timken end bearing which takes care of both radial and thrust.

Now every Emerson Jordan offers you the tremendous advantages of the Bolton INVERTED WEDGE Plug and Timken Roller Bearings.

These two great features put the Emerson Jordan in a class by itself for unit control, lasting satisfaction and true economy. No other Jordan has these great construction advantages.

Make sure of all the benefits and savings that result from these two wonderful improvements in Jordan engineering. Standardize on Emerson Jordans.

Write for full information and estimates



Showing the Bolton Inverted Wedge Plug as inserted in the Emerson Jordan above.

The EMERSON MANUFACTURING COMPANY

LAWRENCE ∞ ∞ ∞ MASSACHUSETTS

DIVISION OF JOHN W. BOLTON & SONS, Inc.

3492

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

Affiliated with

THE AMERICAN PAPER AND PULP ASSOCIATION

Edited by
THOS. J. BURKE, C. A., Sec.-Treas.

Bonus Systems and Setting of Standards in Pulp and Paper Mills*

By J. P. Hagenauer[1]

The latest edition of Webster's New International Dictionary defines a bonus as "Something given in addition to what is ordinarily received by or strictly due to the recipient; Money or other valuables given in addition to an agreed compensation."

In other words a bonus is offered an employee to induce him to put forth greater effort by stimulating in him the love of gain inherent in most human beings.

Immediately the question arises—How much bonus and on what basis shall it be paid?

The answer will be found: Through substitution of fact for judgment and guess work as foundation of industrial relations. Through determining definitely the task which the employer is buying and the employee selling. Through making such a task the highest which can be maintained to the mutual interest of both sides. Through establishing wage rates which shall be permanently satisfactory to employer and employee. Through enabling the employer to make schedules of production which he can maintain and by lowering the cost of production.

The Initial Steps for a Bonus System

Operation and time studies are the initial steps to be taken to lay a satisfactory foundation for a bonus system.

Time study is a scientific analysis of methods and equipment used in doing a piece of work, which enables the observer to determine a correct method of performance to be used as a basis for establishing standard tasks.

It is, therefore, more than a mere timing with a stop watch. It is an analytical study of methods and equipment used in which timing is only a part. Neither is it a mere speeding up process. Its purpose is to develop the "one best method."

Standards resulting from studies are often so high as to meet, at first, with unbelief and opposition from the workmen. However, it is to their best interest to have tasks measured by standards which are accurate and fair to all. After a standard has been set constant vigilance of the management is required to maintain correct conditions of equipment and materials, as previous habits of work and methods will try to reassert themselves. Even the best set tasks once in operation will not maintain themselves.

* Delivered at Convention of the Cost Association of the Paper Industry, Wausau, Wis., Sept. 19, 1929.
[1] Industrial Engineer, L. V. Estes, Inc., Chicago.

In all industries, especially so in the paper industry, the quality of the product must be protected, as the setting of standards always stimulates workers to increase quantity of production. Sufficiently tightened supervision will tend to maintain quality through a standard rather than lower it. Quality must be made a prerequisite for quantity, i.e., a given number of units must not be considered produced unless each unit is up to the quality standard.

Often we are asked—What type of man shall we use to make out time studies after your engineer is gone?

College trained men and shop trained men each have advantages in this work.

Probably the best is a technically trained college man with several years practical experience. Recent graduates are seldom satisfactory. In short, the best material is none too good for this work, and a stop watch is a dangerous tool in the hands of an inexperienced or unscrupulous person.

The routine of time and operation studies is so well known that no mention of it needs to be made here.

No time studies should be made unless the work places and conditions surrounding them have been arranged to the best possible advantage obtainable under local conditions.

Should Be Made on Average Workman

The time studies to give the most desirable results should be made on an average workman, not the fastest nor the slowest.

The purpose of the study should be first explained to the foreman and then in his presence to each man to be observed. He should also be instructed neither to speed up nor to slow down, but to work at his or her natural gait. It will be observed that for a short period the man will be self-conscious and either slow down or speed up, but if the study is of sufficiently long duration he will lapse into his accustomed speed.

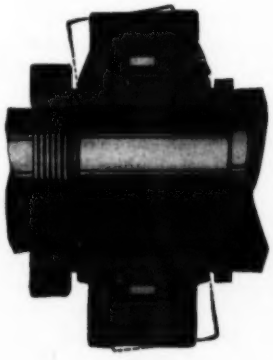
Shorter studies are to be recommended for female employees, as the presence of an observer seems to cause them to become irregular and erratic in the performance of their task even if it has been familiar to them for years.

After a sufficient number of time studies have been made and figured, we are ready for the establishing of a standard or an allowed time for the operation under consideration.

Often the engineer is told: you can not set a standard for this,

WHERE OPERATION MUST NOT BE INTERRUPTED!

One of several NORMA-HOFFMANN Precision Roller Bearings on the cylinder moulds in the plant of Bloomer Bros. Company, Newark, N.J.



A wholly-enclosed, moisture-proof, lubricant-packed, self-aligning NORMA-HOFFMANN Precision Roller Bearing.

No ordinary bearing is "good enough," and no anti-friction bearing is "too good," for paper machines that must run without interruption day in and day out.

In the installation here pictured, there have been definite and substantial savings resulting from the use of NORMA-HOFFMANN Precision Roller Bearings:—

LESS POWER CONSUMED...LESS LUBRICANT USED...LESS LABOR FOR LUBRICATION... UPKEEP EXPENSE REDUCED...FELT LIFE INCREASED...PRODUCT MORE UNIFORM

The experienced counsel of our engineers is at your service, in applying PRECISION Bearings to paper mill machinery

NORMA-HOFFMANN PRECISION BEARINGS

NORMA-HOFFMANN BEARINGS CORPN.—STAMFORD CONN. U.S.A.

that, or the other operation. There is no operation being performed in any mill for which, after the proper studies have been made, a standard cannot be set. At times it is difficult, that is true, and sometimes it is not desirable or advisable to set a standard, but if necessary it can be done.

Best Possible Time

The unit times recorded on the time studies properly determined and totaled, will furnish what is known as the "best possible time" in which a good operator, working under existing conditions, can perform a given job with the existing method and equipment. To establish the standard or allowed time, there are added certain percentages to cover fatigue and necessities of life, also an incentive allowance, the amount of which depends on the nature of the work, etc.

Knowing from his first investigations the amount of product to be handled by certain operators for a certain period, say a year, and from his time study the amount of time required to perform the operation, the engineer can determine the number of operators required for this class of work. The difference between the present number of men employed, and the needed number represents the saving to the company. The extra number of men should be stricken off the payroll or transferred to other departments where help is needed, in preference to hiring new outside help. No attempt on paying a premium should be made before the number of men has been reduced.

How can the employees be induced to meet these standards?

Through the promise of increased earnings, that is, through participation in the savings made for the employer, by the increased effort of the employee.

Of the various plans of incentive wage payments in effect throughout the country, we believe, that the Premium Wage Plan will give the most satisfactory results, and is by far the most just for both management and labor.

Features of the Plan

The outstanding features of this plan are:

1—The basis of computation is an allowed time.

2—The employee is rewarded for increased effort by being paid for all "time saved" at his full hourly rate.

"Time saved" is the amount obtained by subtracting "actual time worked" from "allowed time."

3—If an operator does not succeed in completing a given job within the allowed time, he is not penalized directly. That is—he is sure of getting his regular hourly or base rate whether or not he completes the job within the allowed time.

An employee who continuously fails to make premium should be shifted to other work or released.

4—It is to be desired that each operator earn from 15 per cent to 25 per cent more than the average of his class. This means that from 15 per cent to 25 per cent of the productive hours are being saved for the company; that the output for a given length of time is increased; and that employees will want to stay with the company due to increased pay.

Instead of considering employees who are earning above the average pay, as being overpaid, the company should investigate the men who are not making a premium and find out the reason for their failure. If the allowed time is too low it should be adjusted so that premium can be made. If the employee is too slow or unfitted for the work he should be released or transferred elsewhere. Except in cases of obvious and serious error, however, the allowed time must not be changed, unless the method of operation is changed or the equipment improved.

5—A spirit of fair dealing must be impressed upon the men throughout. The management must realize that employees, who earn a premium by added effort, increase production and are cheaper at 30 per cent increased wages than low priced workers, who have no interest in their work, are low producers and must be replaced frequently. Training new men is costly.

Some Reasons for the Plan

Some of the reasons for recommending this plan are:

1—Being based upon a unit of time, the unit is not affected by fluctuations in the value of the dollar. If the wage rate per hour of a given class of operators goes up or down the company has a right to vary the base rates to correspond, but the standard unit times are not changed thereby.

2—If an operation is simple or light enough to make possible the use of a cheaper grade of labor, this can be taken advantage of without any change in the time set.

3—If a higher priced employee is forced to work on a simple operation temporarily, he is paid at his own base rate and no variation is necessary in the allowed time.

4—If several workers are required for a single operation the allowed time set for that operation will automatically apply to the entire crew at their respective rates, thus eliminating the difficulty which arises in the adjusting of piece work schedules under similar conditions.

5—The allowed time permits the scheduling ahead of work on this basis throughout the mill and if desired the visualizing on a chart or in a schedule book in such a way that all departments and work places can be easily and centrally controlled through the office.

Output Per Man Sometimes Doubled

6—The time tickets required in connection with this plan can be designed and adapted to furnish the cost department readily with all the detail costs and information so highly desirable from their viewpoint. They will also facilitate the recording of a performance record of each man for the entire year. Such a record renders valuable aid in selecting and promoting employees.

7—The Competitive Spirit in men can be taken advantage of by posting daily in a conspicuous place in each department, the amount of premium hours earned by each man.

The plan outlined above is the most desirable one; but, of course, to be modified and adapted to the conditions and requirements of the various departments throughout the mill. The principle, however, remains the same.

Under a properly laid out premium plan such as outlined, it has been found in many cases that the output per man per hour was doubled, and more; and the quality of output was improved.

As a safeguard, however, the company should reserve the right to penalize employees for continuous defective work.

If desired by the company the amount of premium earned by any individual employee or group of employees can be limited to a certain percentage or any other distribution desired can be made of the savings, without changing the principle of the plan.

In the preceding we have outlined a bonus plan where quantity with quality was the governing feature.

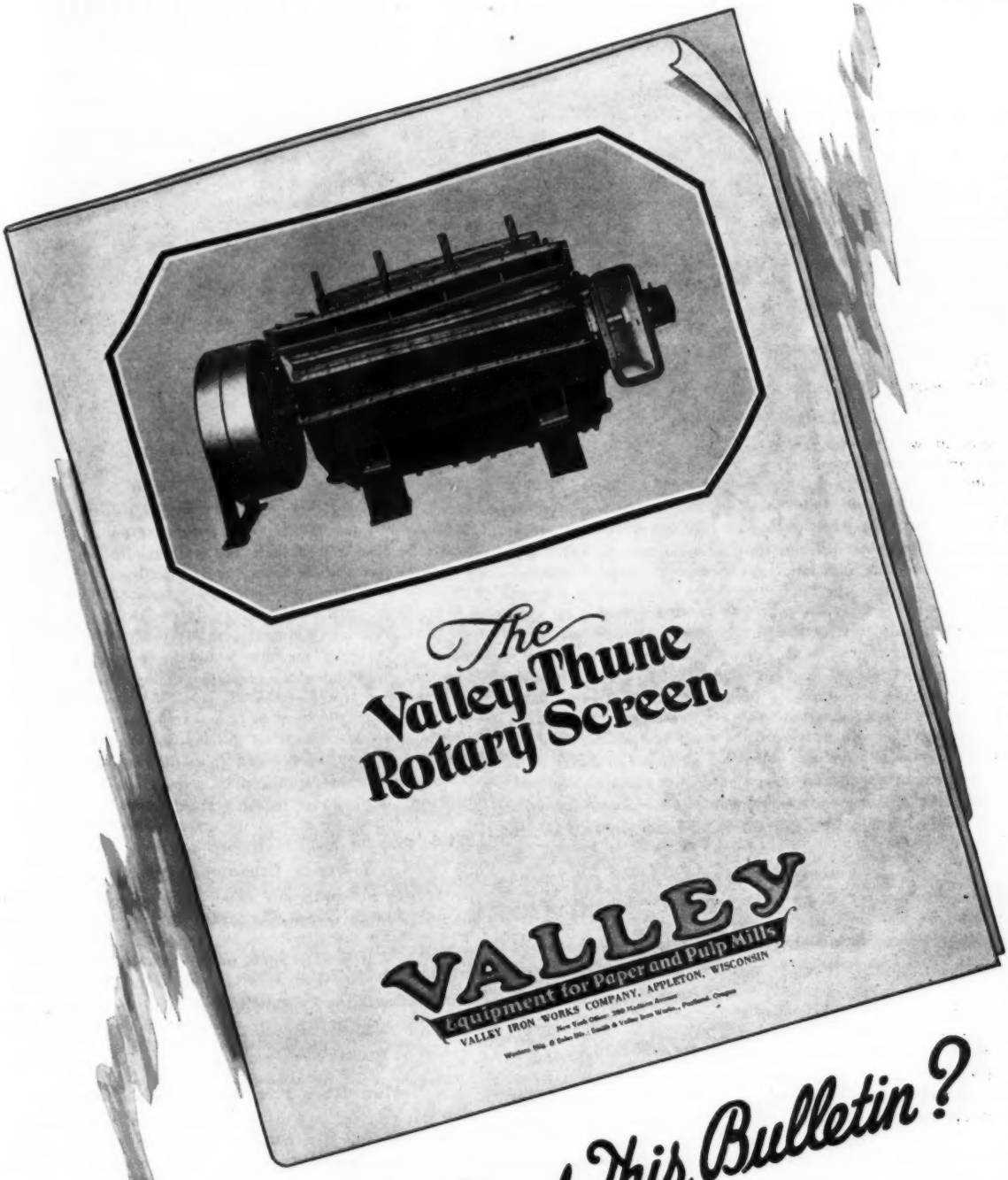
Each Department Must Be Analyzed

Each department of a paper mill must be analyzed to determine just what object is to be attained and the relative importance of quantity, quality and material saving decided upon.

In some departments it will be found that quality is the governing factor. In such a case allowable variations from exact standards of quality are prescribed and incentives for keeping within those limits established.

Whatever the governing factor in any department may be, it is possible to determine a standard and to provide an incentive of mutual interest and benefit of all concerned.

"It can be done."



Have You Read This Bulletin?

It explains the unique principles of rotary type construction which enables the Valley-Thune Screen to screen sulphite and sulphate pulp so thoroughly clean—how it does the work of 2 or more flat screens—how it eliminates practically all maintenance cost—and why power consumption is so extremely low. Address your request to the Valley Iron Works Co., Appleton, Wisconsin.

Rated Machine Capacities and How Compiled*

By C. R. Whipple[1]

This is a very broad subject and, therefore, we can only talk in generalities regarding the cost of the manufacture of the paper machine and the best method of predetermining just what a paper machine should turn out. It is very hard to predetermine what a machine actually will turn out. Thus, it is hard to predetermine what the actual cost of the product from the standpoint of the paper machine should be. As you know, when we are asked to furnish a machine with a certain capacity, the first thing we have to determine is what the maximum width of the trimmed paper will be on the machine. After we find this out, we have to know what material the paper will be made from and about the grade of the finish. With this determined, we can give the width of the machine fairly correct; we can arrange the contents of the machine, both with the thought of the maximum production desired and with the thought of the highest finish desired.

Length of Wire

Length of wire is governed by experience; also speed of machine and nature of stock used.

The number of driers is based somewhat upon the kind of paper to be made. High temperature will destroy strength, also finish.

It is a rare occasion when we build a machine with the expectation that that machine will run constantly on a fixed width and grade of paper; thus, in taking into account the productions, we have to figure that on the minimum widths there will be a great deal of paper that must come across the Fourdrinier, but go back to the beaters. By this method the efficiency of the machine is injured. This, of course, is all caused by the fact that the consumers of paper demand different widths under certain conditions and until the consumers of paper can arrive at some fixed width, it is hard to predetermine the average amount of production that a machine will make and the most economical point of manufacture on that machine. When we are asked to figure on a certain amount of production on a Fourdrinier machine, we base our calculation on records of machines making similar papers and, in some cases, have to resort to certain formulas, one of these which is, no doubt, familiar to all, is as follows:

Formula for Speed

Knowing the speed at which a sheet of 24x36—480 sheet basis, can be run, we use the formula:

$$\frac{\text{Trim in inches} \times \text{speed in feet per minute} \times \text{weight}}{576} = \text{Lbs. per hr.}$$

These figures give a rough idea of the amount of paper that can be manufactured on that Fourdrinier machine per hour, but to arrive at the production for a day, we usually multiply by twenty-two hours—never over twenty-three hours—as there are always breaks, or pick-ups, on press roll, or at sometime or other the driers probably get a little too hot and there will be some snaps there.

In arriving at the finish on the calenders in most cases they have to moisten the sheet either by a spray or by a water box or by a vapor. In some cases this will cause snaps at the calenders. These have to be taken into consideration. Changing from one reel spool to another reel spool entails some lost paper. Leading from the spool to the winder shaft again entails some loss. Then you have a certain amount of trimming at the slitter. This must be considered.

Thus we have found it an incorrect way of determining the production of a machine, but it is the method that must be used, as we do not know of any way of arriving at an accurate production. We have found in a general way, that if we figure on twenty-two hours perfect running of paper, it usually comes out as a fair average and gives the man a machine that will give him the production he desires; thus the predetermined costs on the paper machine and the predetermined productions on the paper machine are all governed by the law of average, and the builder must be "dead sure," as if he worked too close, there might, at some time, be a possibility of not getting a full production on the machine. That would be a calamity.

Shrinkage With Ground Wood and Sulphite

Another point that must be considered is that a sheet that contains a certain percentage of ground wood will shrink in a manner that will be different from a sheet that contains a large percentage of sulphite. The shrinkage of the sulphite sheet will be very different from the kraft. Then if the preparation of the sheet is to make glassine or some hard sheet, the shrinkage again will be different from the ordinary wrapping sheets; thus we, as builders, must predetermine the machine by the law of averages, or past experience.

The cylinder machine is more easily determined than the Fourdrinier, because a well built and well handled cylinder machine rarely ever has a break from one day to the other. This does not have to be considered very carefully. Again the cylinder machine, in many cases, cuts the paper into finished widths or into finished rolls in the machine from the continuous web. Thus the production of the cylinder machine would figure very much closer to the actual one hundred per cent, possibility of the machine than the Fourdrinier would. When I speak of "one hundred per cent," I mean, knowing the sheet to be a certain width and figuring that it would run every minute of the day and that there would be no broken paper, everything would go to the car. That is, of course, an impossibility, but it would be a true one hundred per cent. Therefore, the cylinder machine should come nearer to producing one hundred per cent of the actual figured production of the machine than the Fourdrinier machine.

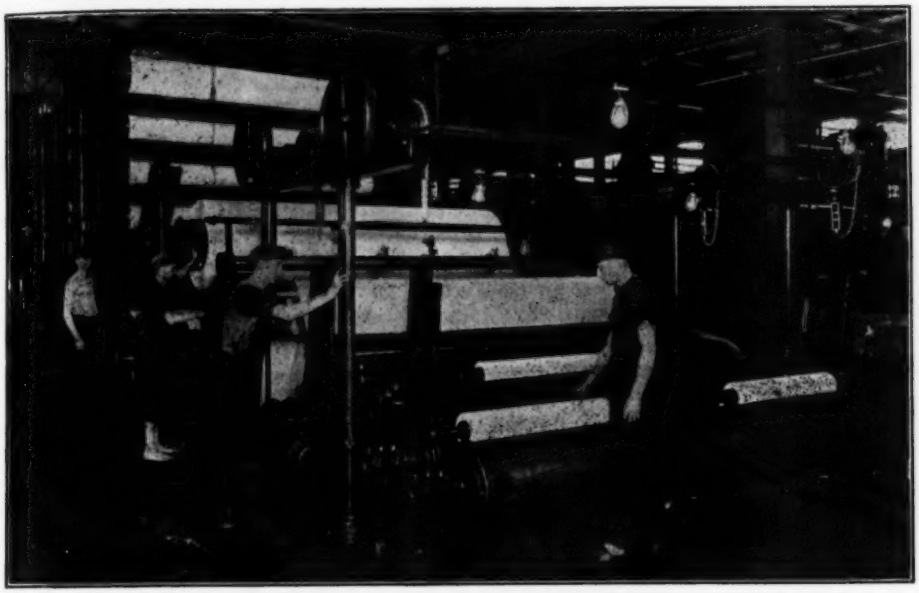
Drying Capacity of Machine

In figuring the capacity of either machine, we must always take into consideration the drying capacity of the machine. We have found with the latest systems for removing condensate from the driers, that it is safe to figure about twenty-four pounds finished product per square foot of drying surface, providing everything about the driers is correct and the method of removing and separating the condensate—using the vapor in the machine and getting the water into use in another direction—is all taken care of as it should be.

How Much Forming Surface Is Needed

The test required and the material required in the board to get that test, helps us determine on how much forming surface we need; in other words, if we want to run a high test board at a high speed, say 300 feet or over, we must have at least seven vats that will give seven layers of paper, which, put together, gives you one sheet of board. We have on occasions had eight cylinders; theoretically, eight are better than seven for running high test and getting speed and production, but there are other points to consider. Some grades of paper fall off from the felt more quickly than others. We are always safe on seven cylinder molds. We are not always safe on the eighth mold. Thus, to get the highest speed and the greatest production on board at this time, we rarely ever exceed seven layers of paper in one sheet of board. We must then get rolls enough and arrange correctly so that the greatest amount of water will be eliminated from this combined sheet of

* Delivered at Convention of the Cost Association of the Paper Industry, Wausau, Wis., on Sept. 20, 1929.
[1] Beloit Iron Works, Beloit, Wis.



"M & W" Four Drum Winder for Book Paper 18" dia. drums 150" face. Photograph taken in mill of Champion Coated Paper Co., Hamilton, O. (This is one of their 14 "M & W" Winders.)

25th Anniversary of the "M & W" Four Drum Winder and Slitter

Today it is still the most practical and economical Winder, and is universally used by leading paper makers.

During the past few years improvements, which are fully covered by Patents, have been made to meet conditions of the modern high speed and up-to-date mills.

OVER 1000 IN OPERATION ON ALL GRADES OF PAPER AND BOARD.

Each roll is wound on an independent shaft. If a break occurs, paper on other rolls is not affected; this means less number of rolls to be pieced.

Plugged rolls are wound on Collapsible Shafts.

Paper is wound on shells or cores of any description. This is a great advantage over the Two Drum Winder Type, as the shells or cores do not have to be the same length as rolls of paper.

NO INTERWEAVING OF ROLLS.

Rolls wound any width and of variable diameters.

Shipping rolls made on paper machines with this winder from an uneven sheet of paper, made hard and without wrinkles.

THE MOORE & WHITE CO., NORTH PHILA. STATION PHILADELPHIA, PA.

PAPER · MACHINE · BUILDERS

board before it arrives at the driers. If this is all taken care of, twenty-four pounds of paper to a square foot of drying surface is good and according to the law of averages, which we have always applied on a paper machine production, this should come out safely and be sure to give the purchaser the amount of production he desires per day.

Average Cost of Production

You can readily see how hard it is for the builder of a paper machine to arrive at anything except an average production, an average cost of production, as it is all determined on the orders that come on the machine, and how near it can be brought out to the one hundred per cent, which is a perfect sheet without any loss, delivered from the wet end to the cars.

As an illustration a 224 inch wide machine was sold with a rated capacity of one hundred tons per day, but they have attained a tonnage around one hundred and thirty per day, and the speed slightly in excess of about 1,020 feet per minute.

At least it is our policy to furnish machines that will be capable of exceeding the rated capacity, which is evidenced by the following illustrations:

A new kraft machine rated at 85 tons and only in operation a few months has made 100 tons and we believe will exceed this several tons.

A new machine rated at 100 tons has made 130 tons.

Our policy is to furnish machines with the possibility of increased production and designed for most efficient operation. In this connection, I would like to read you an extract from a magazine on "Record Run on News Print Machine."

"The advantages of well designed modern equipment and good management are illustrated by the following noteworthy performance. Starting one week on Monday morning, the machine ran one hundred per cent, without interruptions until the following Sunday morning. Thus providing a full twenty-four hour operating schedule for six days, but for the short period required to start the machine on Monday and shut it down on Sunday."

This means that the company owning this machine benefited by avoiding the heavy losses which always attend shut-downs and interruptions to manufacture and reflect most creditably on the careful work and attention given by machine crew, process men and machine men.

In the foregoing we trust that we have pointed out the uncertainties that are prevalent in arriving at the rated capacities of the paper machine and that the results obtained depend to a very large degree upon the type of equipment used and being able to use it to an advantage, which is not always possible on account of variation in orders run on machine.

Low Water Closes Franklin Mill

[FROM OUR REGULAR CORRESPONDENT]

GLENN FALLS, N. Y., December 21, 1929.—It was learned here this week that the Franklin, N. H., mills of the International Paper Company have been forced to suspend operations because of low water conditions with the result that several hundred men have been thrown out of employment. The mills are rated among the largest producers of news print in the country. One paper mill and three ground wood plants are affected.

Curtaiment of activities in the Maine and New Hampshire plants is believed to have prompted the International officials to have machines in the mills at South Glens Falls and Fort Edward converted to the manufacture of news print. Work is now under way in the South Glens Falls plant to have two machines ready for operations in about a month while some of the equipment at Fort Edward has already been changed over to produce news print.

Considerable work remains to be done on the two machines at the South Glens Falls mill which have not been used extensively since early in 1922. It was at first believed that the equipment could be overhauled in time to have the machines running early in January but at least several weeks will be required.

To Make News Print at Fort Edward

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., December 21, 1929.—A number of changes became effective this week in the local mill of the International Paper Company and several machines started the manufacture of news print following orders received to change over from bond paper. The return to news print was accomplished with very little trouble and while no definite time was named in the order it is believed that the change is only temporary. When the local mill was made over a few years ago from a news print to a bond mill machines 5 and 6 were so arranged that with but little work they could be shifted for the making of either news print or bond and the move this week resulted.

Since the company expended about three million dollars in making over the plant the entire equipment has been in constant operation. Under the new schedule it was announced that part of the machinery would continue on bond and wrapping paper. Receipt of additional orders for news print is believed to be the reason of renewed activities in the manufacture of news print by the International in their mills at South Glens Falls, Corinth and Fort Edward. The company has just transacted a several years contract with the Hearst publications and the belief prevails here that while at this time of the year the bond paper business is usually a trifle slack the shift is made to keep the mills in full operation. The local plant is one of the main producers of bond paper in the International group.

It was also learned that the South Glens Falls plant of the International Company will resume the manufacture of news print early in January. The plant has been shut down for two years and it is reported that all equipment is now being overhauled prior to start. It is understood that the company is now taking applications for a working force which will number over one hundred hands.

Lumber Trade With Australia

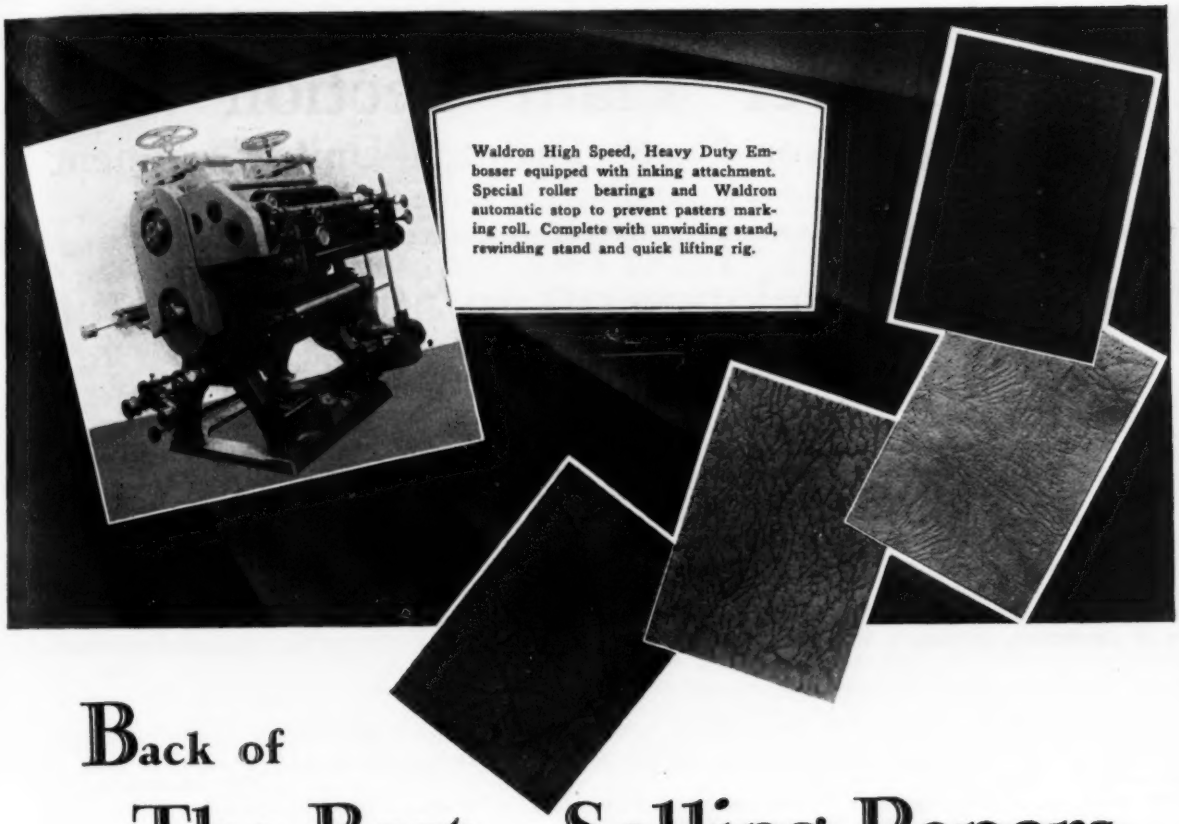
A delegation of British Columbia lumberman has left for Australia to initiate an intensive lumber selling campaign there. Trade with Australia has shown a large increase as a result of the subsidized steamship service recently inaugurated.

During the four months that this subsidized service has been in operation British Columbia's exports of lumber to Australia have increased from an average of 2,400,000 feet a month to more than 6,000,000 feet a month. If this rate is maintained through December the total shipments this year to Australia will be almost twice that of 1928.

An attempt will be made to boost the sale of hemlock, which is at present a drug on the market despite the fact that its output is steadily growing because of the gradual cutting into the smaller stands of timber where hemlock is abundant. Australia is said to import 350,000 feet of Baltic hemlock annually. British Columbia could afford to offer hemlock at a low rate. Australia's total lumber imports amount to approximately 750,000,000 feet, much of the timber sold there originating in northern Europe.

Pulpwood Carrier Aground

ALBANY, N. Y., December 7, 1929.—The Norwegian freighter, *Nyhavn*, with a cargo of 1,600 tons of wood pulp, went aground this week in the main channel of the Hudson River after barely clearing the west draw in the Maiden Lane bridge. The vessel was finally floated with high tide. Bearing its cargo for the A. P. W. Paper Company, the ship was several days late in reaching this city from Sheet Harbor, Nova Scotia. En route it weathered a severe storm which soaked a portion of the pulp cargo. This additional weight was reflected in the greater draught of the vessel. The *Nyhavn* is the fourteenth pulp ship to arrive with cargo for the A. P. W. Company this season and along with the ship came a tug bearing several hundred tons of pulp which had been transferred from a Norwegian freighter early in the journey.



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Review of Developments in Steam Generators

Suitable Accessories Dominate Economical Steam Supply

It has been conclusively demonstrated in comprehensive working tests that it is quite feasible to transfer heat from coal to water and steam with an actual thermal loss of less than 8 to 10 per cent. of the total heat in the fuel. This was accomplished with a boiler of 30,600 square feet of heating surface some five years ago, over an operating range from 65,000 to 250,000 pounds of steam output per hour. In fact, during a 22-hour run, a total evaporation of 131,000 pounds per hour was realized with a total thermal loss of only approximately 7 per cent. In these tests, the use of superheaters, economizers, etc., was entailed, of course, but these accessories had not then been developed and refined to the high stage of efficiency of today's standards for such apparatus. Nevertheless, during the tests, not only were these extremely high efficiencies attained, but a reduction in the temperature of the flue gases to as low as 174 degrees Fahrenheit was effected, leaving really very little margin for future improvement.

The translation of such attainments into achievements in daily operating practice has entailed quite radical innovations in advanced boiler room equipment and conduct, naturally, in which the use of accessories, to distinguish such devices from the boiler equipment proper, has been highly instrumental. The part played by these valuable aids is perhaps best indicated by an example or two of how the essential heating surface for the transference of the heat liberated by the combustion of the fuel to the steam is apportioned in modern high steam pressure plants. Such examples are also particularly pertinent in view of the still cost of high-pressure heating surface within the confines of the boiler proper and of the need of having such portion of the total heating surface at a minimum and working it at a high rate.

Since operating steam pressures have been pushed higher and higher during recent years, in public utility power stations as well as in the power plants serving the pulp and paper industries, the examples may well be taken of two noteworthy and highly efficient central stations operated at a steam pressure of 1,400 pounds per square inch and carrying considerable superheat. In neither of the cases selected is that portion of the total heating surface represented by the heating surface of the boiler proper much more than 10 per cent., being in one case 12 and in the other 11.5 per cent. Neither is any large proportion of the total heating area superheater surface, area which is also within the confines of the boiler proper. By far the larger part of the heating surface in advanced practice is made up by the area of preheaters and economizers employed in salvaging heat from the products escaping from the boiler's combustion chamber.

Apportionment of Heating Surfaces In 1,400-lb. Steam Plants

	Plant No. 1	Plant No. 2
Boiler heating surface	12.0 per cent.	11.5 per cent.
Superheater surface	6.9	9.3
Economizer surface	17.6	6.9
Air preheater surface	46.3	48.2
Gas reheater surface	17.2	20.5
Steam reheater surface		3.6
	100.0 per cent.	100.0 per cent.

In both these plants, the temperature attained by the steam is 750 degrees Fahrenheit and, while the apportionment of heating surface in the two cases shows no very striking agreement, either of the examples well exemplifies the progress which has been made in the attainment of two of the three chief objectives in modern plant design *i. e.*, the successful operation of steam generating equipment at high pressure and at high temperature. The third objective, note quite so apparent from these high-light statistics, is the modification of steam generating equipment so as to permit the heating of feed water to a relatively high temperature by stage bleeding of turbines, at the same time maintaining a high overall efficiency of transfer of heat from the fuel to steam and water.

Of course, the reason for these three main objectives is to effect a reduction in the necessary investment in steam generating equipment per unit output and to effect reductions in maintenance expenses and labor costs in steam generation. Unless actual progress is made in these directions, the development made in steam generation and in power plant conduct is not of much commercial interest. Without effecting actual monetary savings of commensurate order, the pronounced trends toward so-termed high pressure of the power plants serving the pulping and paper industries remains a matter of technical rather than commercial interest. However, very marked economies have been realized by the adoption of high pressure boilers in mill as well as central station plants and no truly progressive mill can longer disregard the literal revolution taking place in economical steam generating practices.

There is always danger, of course, of being led blindly astray during any such marked period of transition from the old to the new, as at present, when virtually every new mill power plant is a relatively high-pressure installation. The mill should appreciate that it is extremely difficult however, to show economical advantages, so far as boiler equipment and practices are concerned, with the present high cost of boiler and power equipment, labor and fuel.

There are a great many influential factors to be taken into consideration and it is well to bear in mind that the successful operation of steam generating equipment at high pressure and high temperature is governed far more than is generally appreciated by the accessories employed than by the actual boiler unit. In fact, an economical steam supply may be said to be dominated by the use made of suitable accessories to a greater extent than by the pressure maintained at the boiler. Of course, if a paper mill is using a great deal of steam for preparation work, the advisability of employing high pressure boilers comes very much to the fore, power in such a case being really a by-product of the steam supply. On the other hand, if relatively little steam is used in preparation work, as when steam is used chiefly only for drying the paper sheet, other types of boilers may prove entirely satisfactory and their use avoid an unnecessarily heavy equipment investment.

Recently, a prominent engineer, well known among pulp and paper mills, investigated conditions for a certain paper company

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which at the time was seriously considering the advisability of erecting an entirely new boiler plant and after an extended study of all factors pertaining to the situation rendered an adverse report. That is, his recommendation was that the concern continue to use its old boiler plant until it literally had to be discarded on account of pressure being cut down on the boilers, his stand being that the company simply could not afford to install a new boiler plant at the present time. Unquestionably, the judicious addition and use of suitable accessories would do more in the way of cutting steam costs, in this case, than a new high pressure boiler battery just now, the successful functioning of which would also entail the use of numerous suitable accessories.

The point to remember is that the boiler question in its entirety is a most complex one and that boiler recommendations and specifications can only be made intelligently after an exhaustive investigation of the use of all suitable auxiliary aids which may be entailed. It is of the utmost importance, moreover, that the mill management keep reasonably well posted in regard to developments all along the line, from the boilers and their refinements down to the most unobtrusive of valves. For all such units involved are highly instrumental in attaining the goal of an economical steam supply.

The more important of these units will be discussed in these columns as individual factors in economical boiler operation during the coming year, it being the aim of this section to adhere as closely as possible to the "unit treatment" in its discussions. The end of the year, however, would appear a most opportune time at which to touch upon the high spots in boiler and accessory equipment development and to review achievement, in such manner providing a subject index for some of the section discussions during 1930.

Boilers and Water Walls

With the marked developments in fuel burning equipment, for both stoker and pulverized coal fired plants, increased furnace sizes and furnace wall protection, rates of heat release per foot of furnace width have been made possible and feasible that could not even be considered with the older designs and constructions of boilers. The amount of boiler heating surface per foot of boiler width, as a result, has had to be materially increased and baffling arrangements modified in many instances in order that the hot gases might hug the tubes more closely.

With the materially lowered temperatures at which the products of combustion are permitted to escape to the stack, due to effective reclamation of heat by economizers and heaters of one type or another and also on account of increased heating surfaces within the confines of the boiler proper, natural draft stacks have become impractical as a rule and the use of induced and forced draft fans, consequently, have become virtually a necessity. More attention has had to be given to the suitable conditioning of the feed water supply, to controlling the slagging evil by the provision of more effective slag screens and to the protection of the furnace by water-cooled walls.

Important betterments in boiler operation through modifications in the baffling arrangement are reported in the findings of the N. E. L. A. Prime Movers Committee which should prove of particular interest to pulp and paper mills striving for improvements in boiler efficiency, especially as prominent paper mills have also resorted to the scheme. A number of engineering concerns, also, specialize along such lines. The cross baffling quite general with horizontal water tube boilers seems to have been applied with excellent results to bent tube boilers as well. In most instances, such system of baffling permits the first bank of tubes to absorb considerable radiant heat and high gas velocity through the first pass is discouraged. Ample furnace volumes and low gas velocity in the early stages of gas flow through the boiler, in fact, tends to a somewhat higher resultant boiler efficiency and does much in most cases to curtain slagging troubles.

It is held that with suitable cross baffling that the draft losses largely in the direction of simplification and not infrequently in may be reduced from 33 to 50 per cent of those occurring at the same ratings with longitudinal baffles. Higher boiler ratings with the same draft at the damper are also said invariably to result and the load on induced draft fans materially reduced. An additional rating, usually of 50 per cent., is claimed.

Probably the most outstanding achievement of the year in strictly boiler development, incorporating these and other refinements, is represented by the two high-pressure steam generator units for the Philip Carey Manufacturing Company's plant at Lockland, O. Each of these units is designed for a steaming capacity of 150,000 pounds per hour at an operating steam drum pressure of 1,840 pounds per square inch, the steam to be superheated to a temperature of 825 degrees Fahrenheit. This is a pulverized coal fired installation, combusion taking place in a completely water-cooled furnace, and the actual rate of combustion is held down to quite a moderate figure.

Steam Superheaters

With the ever increasing demand for high-temperature steam, the design of superheaters, convection and radiation types, and their location in respect to the furnace have been given much attention with the result that standard types of these auxiliary steam heaters are now procurable suitable for final steam temperatures up to 900 degrees Fahrenheit. In some instances, the relocation of convection superheaters, so as to expose them to the greatest amount of radiation in the path of the hottest products of combustion, has converted such units into veritable combination convection and radiation superheaters, flattening out the superheat-output curve, and greatly elevating their efficiency.

The use of radiant type superheaters has also been considerably extended and difficulties, such as the overheating of rectangular-section elements, due to internal scale, insufficient steam velocity, lack of proper uniformity in steam distribution to the various elements and improper operation when taking boilers on or off line; and deterioration of such elements, due to internal strains resulting from the heating of the elements only on one side, have been in large measure overcome.

Radiant type superheaters forming the rear wall of steam and water cooled furnaces, first installed in a New England paper mill, have also been developed with highly satisfactory results. In this type, relatively thin-wall elements of circular section are used. Ordinarily these elements, covering a large portion of wall area, are arranged vertically, spaced about 3 inches apart and about 10 inches out from the refractory walls. This spacing is selected for the reason that with it ashes do not accumulate rapidly on nor adhere to the brick work behind the elements, nor across spaces between adjacent elements. Also, adequate room is provided for soot blower or hand lancing cleaning.

Heat absorption on the sides of these circular elements and on the rear, removed from the furnace, is found to eliminate trouble due to distortion or unbalanced internal strains occasioned by uneven heating. Under comparable conditions, the heat transfer per square foot of surface around the entire circumference of the circular elements is about the same as for the more familiar radiant type superheaters with heavy-wall, rectangular-section, forged steel, elements, while the effective surface per square foot of wall space occupied is some 30 per cent. greater.

The necessity for having clean, dry steam enter the superheater, the quality of which is more important with higher pressure and temperature stresses, demands that only the purest feed water obtainable be used, and this has also led to greater care in excluding any appreciable moisture content. With pure water and the moisture content limited to a small fraction of 1 per cent., also the exclusion of any scale forming matter, the dangers of failure of superheater tubes have been virtually eliminated, even in high pressure and high temperature installations.

Economizers and Air Heaters

Developments in economizer design and construction have been largely in the direction of simplification and not infrequently in

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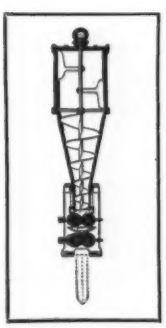

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the incorporation of air heater sections, both for economizers with tubes in horizontal and vertical arrangement. Few radical changes have been made, though considerable investigation has been undertaken in regard to the causes for economizer deterioration and precautionary measures taken to overcome them so far as possible.

Internal corrosion, it has been found can be virtually eliminated if the oxygen content of the water entering the economizers is held to not more than 2 cubic centimeters per liter and the hydrogen ion concentration is not less than 10. These conditions can be easily and regularly checked and maintained, the oxygen content and the hydrogen ion concentration being readily determinable with sufficient accuracy with the aid of simple and quite rugged apparatus, preferably installed in or adjacent to the boiler room.

External corrosion of elements is not a factor in the life of economizer sections unless the gases are cooled below the dew point during economizer operation or moisture is allowed to collect in the elements during periods of shut-down, the latter due to careless washing or to condensation from the atmosphere. Soot blower cleaning, which has come much to the fore in recent years, suffices to prevent external corrosion in some instances and excellent results have been obtained with shrunk-on, cast iron rings or extended surface steel disks pressed onto the tubes, covering the tube elements, and effectively protecting them from the corrosive action of sulphur bearing gases.

In spite of the much more exacting service now frequently demanded of economizers, they are proving much tighter than formerly and their efficiency has been materially increased. This was well illustrated in an installation where modern units were substituted for old cast iron, vertical tube economizers without making any change at all in the induced draft fan provisions. Not only was the overall efficiency of the boiler unit improved, but the maximum steaming capacity of the boiler was increased from 140,000 to 165,000 pounds per hour, about 18 per cent. This substantial betterment was due, not to additional work done in the economizer, but almost entirely to elimination of air filtration into economizer casings and consequent reduction of load on fans per unit of steam generated.

Soot Blowers

While the chief developments in the soot blower field have been mainly in connection with the use of metal treatment designed to enable the blowers to withstand better the high temperatures developed in modern high-pressure boilers and about superheaters and economizers, and in methods of blower support in high temperature locations, considerable investigation has also been carried forward with the view of determining the efficacy of these accessories and their economy, as compared with the use of other devices for boiler cleaning. As many of these studies have been made in quite typical power plants, operating under continuous and exacting, though not unusual, service conditions, the findings in a few cases supply pertinent data of considerable interest.

In one plant where four, 6,000 square foot, water-tube boilers are employed to supply steam at 150 pounds gauge pressure for heating purposes, it was found possible to make accurate comparative tests to ascertain the exact cost of cleaning by hand lancing methods and by the use of modern soot blowers. The total yearly cost of cleaning all the boilers with the soot blowers was found to be $936.00, while with the hand lance method, formerly employed, the yearly cost reached $3,763.00 Furthermore, the cleaning with soot blowers maintained an average gas temperature of 395 degrees Fahrenheit at the exit of the economizers. Similar results with hand lance cleaning necessitated three cleanings per shift, entailing costly draft losses and furnace cooling. The expenses for depreciation, interest and maintenance charges were greater in the case of soot blower cleaning, it is true, but the steam and labor costs were considerably the higher with hand lance cleaning, so the respective annual cleaning costs by the two methods is a good indication of the advantages of employing the more efficient and economical blower cleaning.

Even greater dividends are realized by the use of soot blowers in another installation investigated, where five, 7,630 square foot, horizontal water-tube boilers are fired with coke breeze at normal ratings of 170 to 200 per cent. Fuel is consumed at a rate of approximately 56 tons per boiler each twenty-four hours and furnace temperatures of close to 2,500 degrees Fahrenheit are attained, steam being generated at 175 pounds gauge. Before the installation of modern soot blowers, these conditions brought about such a severe slagging action in the lower part of the first pass that one man on each shift was kept continuously rodding tubes, yet could not keep the deposits down. Drafts had to be increased until a positive pressure of 0.15-inch was produced in the furnace. The result of such unsatisfactory conditions was excessive stoker, furnace and other constant repairs and inability to keep the boilers on the line more than about ten days at a time.

The installation of a suitable soot blower element at the bottom of the first pass in each boiler, operated every two hours, entirely overcame the slagging difficulty, however, and enabled the boilers to carry full loads with normal draft. The saving in de-slagging labor and in repairs alone for the five boilers is reputed to amount to $9,239.00 a year, in addition to which a substantial saving in fuel has been effected.

Feed Water Regulators

With the trend to high pressure boilers in mill plants has come added dependence upon efficient feed water regulators and some important developments have been made in both regulating valves and governors. Various systems of control have been refined to meet the requirements of advanced boiler demands, actuated by steam flow, combination of steam flow and water level movement, mud drum pressures, hydraulic relay operated valves for very high pressures and various systems combining several independent operations.

Devices such as these are, of course, of an essentially specialized character, making it exceedingly difficult to discuss them in general terms or to advance examples of attainment in their exacting and highly important functions. Consequently, it may be permitted to mention one or two outstanding achievements effected by such devices without more than a bare statement of results.

In one large steam station, where a differential water pressure type regulating valve was installed, a two hour test was made, the results of which clearly indicated the marked dependability of the device. During the first hour of the investigation, the boiler was held at fairly uniform load, but during the second hour the load varied widely. At one time, the air supply was shut off completely and the load carried dropped from 128,000 to 65,000 pounds per hour within two minutes. A couple of minutes later the air was back and the load returned to normal, and at no time did the regulating valve fail to hold the excess pressure within limits of 5 pounds.

In another plant, the steam fluctuated 28,000 pounds per hour and the pump pressure showed a variation of up to 55 pounds. The excess pressure, however, controlled by a regulator combining a differential water pressure regulating valve and a feed water regulator control valve, varied only within limits of 5 pounds.

Water Gages and Water Columns

As steam pressures have increased, very decided limitations have become apparent in the use of the familiar, standard tubular water gage glasses, particularly when pure feed water is employed. Inadequate strength of glass is not the only, or even the most serious, handicap which has had to be contended with, for pure water at a pressure of 350 pounds and upward, at the temperature of the feed, has a distinctive chemical action on the glass. So much so, in fact, that even with adequate strength it is exceedingly difficult to pack such a glass for pressures in excess of 600 pounds. Furthermore, packing successfully consummated, the

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life of the glasses when subjected to pressure of 350 pounds or more is usually a matter of but a few hours to six weeks.

Flat, plain or fluted, gage glasses are better for such high temperatures and pressures, but here again the deterioration from the action of the water, renders them unsatisfactory. Resort, consequently, has been made to various built-up constructions of water gages, and with much better results, the usual form consisting of thick glass plates, single or double, on either side of the gage, held in position by metal plates, covers and holders, and gasketed with mica. The mica gaskets serve to protect the glass against chemical action and the whole assemblage is rigidity bolted together, permitting the ready replacement of gaskets, an operation necessary every month or two. So construction water gages are procurable, even now, for pressures up to 2,000 pounds per square inch.

In the case of those water gages commonly termed water columns, either of the vertical or inclined gage types, very much the same scheme in construction has been followed. That is, tubular glass columns are employed for pressures up to 300 or 400 pounds and flat glass assemblies protected by mica gaskets for higher pressures.

Steam Purifiers

The desirability of having the steam supply substantially dry before it enters the superheater, particularly in high pressure installations, has created, quite naturally, more interest in and a greater demand for steam purifiers. The need for such accessories is further intensified by the much more general use of water walls, on account of the large volume of water circulating and passed into the boiler drum from such walls and the high velocity of the mixture entering the drums, the effect being to decrease, or lower, steam quality.

The chief development has been the adaptation of the units more extensively to line use, not simply in or at the boiler. Such a unit can be put into the steam line, like a valve or separator, at some predetermined point, placed directly above the boiler steam drum with outlet to the superheater or to the steam line, or located almost anywhere in the line.

While paper mills are now fairly well familiar with the value of a dry and pure steam supply, "standard specification steam" as it is sometimes termed, the capacity and adaptability of these accessories whose function it is to furnish such a supply is not generally known. Consequently, the installation at the high pressure plant of the Waldorf Paper Products Company at St. Paul, Minn., commands attention.

Here, the two large, 13,460 square foot, boilers operate at a pressure of 650 pounds and the temperature of the steam supply is elevated by 155 to 265 degrees of superheat. The steam output of each of these boilers is passed through a steam purifier having a capacity of 250,000 pounds of steam per hour at 650 pounds pressure.

These purifiers are of the so-termed receiver type and are installed between the outlet from the boiler and the inlet to the superheater. They have large overload capacity, are self-cleaning and, on account of the low steam velocity through the receiver chamber, impose very little pressure loss. They deliver steam to the superheater with an entrained moisture content of only a very small fraction of 1 per cent.

The experience of a paper mill with this type of purifier, some years back and before the advent of the present day high pressure plants, should also prove of interest. This particular mill, employing saturated steam exclusively, was troubled with the wetness of its steam supply, especially in connection with the operation of the calendering rolls. Excessive time was required in heating the rolls. The installation of a single purifier of sufficient capacity to handle the entire steam output, not only thoroughly dried the steam supplied the power units, but the heating-up of the calendering rolls before 8 each morning was readily accomplished. Previously, it had been 8:30 or later before the rolls could be sufficiently heated for satisfactory calendering. After the installation of the purifier, even the exhausts of the power units showed no marked evidence of moisture.

Valves

In the line of valves, etc., standards of the past have litetrally been swept aside with the ever increasing demands for such essential accessories suitable for use with high and higher steam pressures and steam temperatures. New standards have had to be evolved and already valves for very respectable pressures and temperatures have been added to the lines of standard valves on the market.

Safety, non-return, stop-check and blow-off valves, for instance, suitable for steam pressure up to 1,400 pounds per square inch and temperatures as high as 750 degrees Fahrenheit, are offered by leading valve manufacturers. While this capacity range may not supply the needs of such exceptional installations as that of the Philip Carey Manufacturing Company, where steam will be generated at a boiler pressure in excess of 1,800 pounds, it does meet the requirements of all other high steam pressure installations so far planned for pulp and paper mills in this country and Canada.

It is quite out of the question, of course, to attempt here anything but the very briefest reference to the important and in many instances pronounced modifications in design, metal, seat and disk, spring protection, removal of obstructions to free steam flow, packing refinements, etc., for valves suitable for the requirements imposed by the new standards for high-pressure, high-temperature service. Many problems have been faced and successfully solved and even more exacting requirements were only a few years back. A great deal has been accomplished by valve manufacturers and much more can confidently be expected from them in the near future. One effect of progress such as this is and will be a substantial reduction in the cost of suitable valves, a reduction certain to be reflected in all other lines of accessories and high pressure boiler equipment, the result of which will be a considerable decrease in the investment entailed for a modern high-pressure steam plant.

When this transpires, there will be little question but that high-pressure boiler plants will become the rule in the paper making industry, already there are more high pressure steam plants serving pulp and paper mills than are to be found in any other industry, with the possible exception of that of the electric public service utilities. So very pronounced is the trend in this direction, even now, that no progressive mill can afford not to interest itself in developments and achievements in the steam generating field. But first, every mill should investigate and re-investigate its present power plant practices and look well into the services being rendered by its boiler room accessories. No mill need build a new boiler plant in order to reduce its steam costs and the more experienced a mill becomes in extracting all available energy from the fuel it burns, and making profitable use of it, the more certain is the establishment to profit to the utmost when the time comes for assuming the investment entailed in building a new power plant.

Watermark May Prove Will a Forgery

HOLYOKE, Mass., December 17, 1929.—Wilbur J. Turner, a noted handwriting expert testified last week in Probate Court in Dedham that the watermark on the paper on which the will of the late Mrs. Cora Littlefield was purported to have been written proves that the will was a forgery.

The Parsons Paper Company of this city made the paper on which the will was drawn up. The date of the document was 1925. Counsel opposed to the will is trying to prove that the watermark showed the paper was made in 1928. Roger W. McCorkindale, Superindent of the Parsons Paper Company and William A. Holgate both testified relative to the paper and its watermark several months ago.

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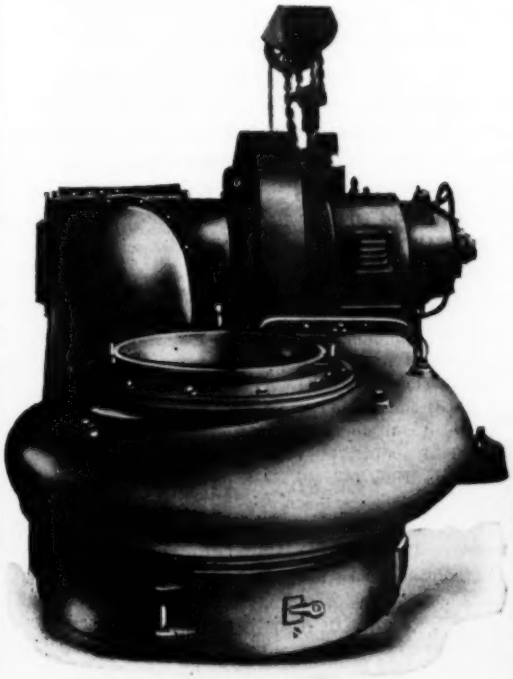
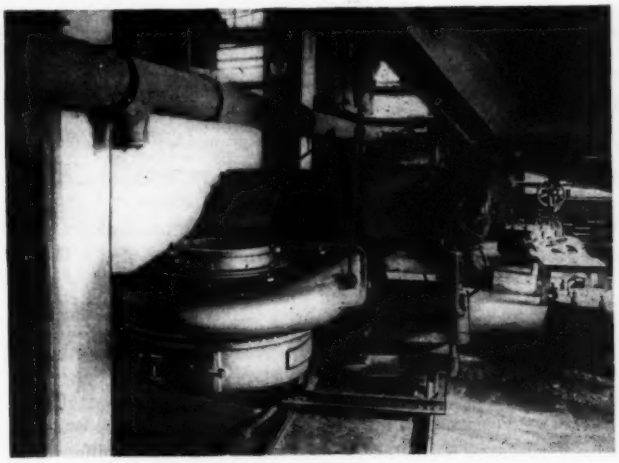


An improved method in pulp manufacture which produces worth while economies in labor, processing and production costs, and at the same time increases both the amount and the quality of the output. The increase in quality results in increased sales—FRESK DIGESTER FILLING SYSTEMS not only save you money, but they make it for you. The increase in production in plants using the FRESK SYSTEM is from 20 to 40% without affecting the length of the cooking cycle nor does it interfere with stewing the charge subsequently. It does not depend upon any cooking method—both sulphite and sulphate meet with equal success.



The advantages to be gained by the use of the FRESK DIGESTER FILLING SYSTEM may be summed up as follows: there is an increased compactness of the charge with consequent increase of production up to 40%—lowering of production costs with saving in liquor, sulphur and steam—sales increased by improvement in quality. You can readily see that the cost of installation of FRESK charging system is low in comparison with results.

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PAPER TRADE JOURNAL

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COMING EVENTS

American Paper and Pulp Association, fifty-third Convention and Meeting. Pennsylvania Hotel, February 17-20. Annual Meeting, Thursday, February 20. Annual Banquet, Grand Ball Room, Thursday, February 20.

National Paper Trade Association of the United States. Convention. Pennsylvania Hotel, February 17-19. Theater Party, "Sons of Guns," Imperial Theater; Supper-Dance, Hotel Astor, Wednesday, February 19.

Technical Association of the Pulp and Paper Industry. Convention, Pennsylvania Hotel, February 17-19.

Salesmen's Association of the Paper Industry. Annual Meeting, Pennsylvania Hotel, Tuesday, February 18. Luncheon, Tuesday, February 18.

New York Association of Dealers in Paper Mills' Supplies, Annual Banquet, Hotel Commodore, Wednesday, February 19.

Canadian Pulp and Paper Association. Annual Meeting, Pulp and Paper Research Institute, Montreal, January 31. Annual Dinner, Ritz Carlton Hotel, Montreal, January 31. Woodlands Section, Pulp and Paper Research Institute, Montreal, January 27-28. Technical Section, Engineering Institute, Montreal, January 29-30.

PAPER MEN TO MEET FEB. 17-20

Tradition will be shattered during Paper Week in New York City in February. For the first time in three decades the annual convention of the American Paper and Pulp Association, the National Paper Trade Association of the United States and the affiliated associations and sections will not be held in the Waldorf-Astoria Hotel. This old hotel, famous throughout the world, is now being torn down to make way for a monster skyscraper.

As a result of a careful survey of hotel facilities in New York, the Pennsylvania Hotel has been chosen for this year's meetings. They will be held February 17 to 20 inclusive.

Plans are under way to make this year's business meeting of the American Paper and Pulp Association an outstanding one. Matters of vital interest to the industry will be frankly and thoroughly discussed. The annual banquet is being planned with care; this year's effort will surely measure up with that of the past.

As usual, reduced railroad rates will be available to members of the Association, the National Paper Trade Association and their affiliated associations. The "identification certificate" plan initiated last year, will again be used. Under this plan, round trip tickets to New York for a five day stay can be purchased at the rate of one and one half fares.

As New York hotels are always busy during February, all those who expect to attend Paper Week are strongly urged to make their hotel reservations as early as possible.

FOREST PRODUCTS RESEARCH

Of special interest to the pulp and paper industry among the forest products research items in the agricultural Appropriation Bill which will probably be voted upon by the House of Representatives within the next few days and referred to the Senate Committee on Appropriations is the project for determining the chemical and physical properties of lignin. Comparatively little is at present known of the chemical properties of lignin in spite of the fact that it is one of the chief constituents of wood and one with which the pulp and paper industry has been concerned for years. The methods employed to remove the lignin are very largely empirical and they might be radically changed if more were known about the chemistry of the material; of course, there is always the possibility that information concerning the chemical properties of lignin might lead to important by-products and to means for the elimination of stream pollution.

The appropriation for the study of paper making, if continued for several years, would place investigative research in pulping West Coast woods on a basis comparable to that now being undertaken by the Forest Products Laboratory on Southern wood. Both studies are, of course, of tremendous importance to the pulp and paper industry.

The foregoing are several of a number of reasons why pulp and paper men should concern themselves in seeing that Congress provides adequate funds for the continuation of the good work at the Forest Products Laboratory, at Madison, Wis. The PAPER TRADE JOURNAL urges them to write their Congressmen and Senators at the earliest possible moment to use whatever influence they may have to see that the Laboratory is furnished with such financial support as it deserves.

THE FIVE DAY WEEK

While it is impossible to determine with accuracy what effect the adoption of the five-day week has had upon industries making the change, executives appear to be certain as to whether the shorter schedule has affected the volume of output, according to the summary of the National Industrial Conference's report on the five-day week, just published.

"The executives of 127 companies expressed convictions upon this point," the report says. "In 68 per cent of the plants in which hours per week had been reduced in changing to the five-day schedule, it was believed that output per week had been maintained or increased. This same condition was found in 97 per cent of the establishments in which no change had been made in the weekly total of hours of work. In all, 75 per cent of the reporting companies expressed no complaint on the score of reduction in total output.

"Certain economies are attributed to five-day week operation. The uneconomical overhead cost of operating a plant on Saturday half days is eliminated, and, particularly in companies which maintain their own steam power plant, this is by no means a negligible item.

"Moreover since output on Saturday half-days has quite generally been found to be below standard, the distribution of this time or part of it over the other five days has tended to produce higher output per hour for the week. Even where the Saturday time has not been made up the elimination of these hours has not been re-

garded as a total loss. Where processes required rather elaborate and time-consuming starting and stopping procedure the elimination of one such routine a week has meant a substantial saving in unproductive time and expense.

"Considerable stress has been laid upon the advantage of devoting Saturday forenoons to careful overhauling and repair of plant and equipment. It was the general experience that such work was performed more thoroughly when plenty of time was available, and that the consequent reduction in machine breakdowns during productive operation constituted a definite gain toward more economical production.

"Attendance and punctuality were generally found to be improved as a result of five-day operation Furthermore, such a schedule was thought to attract and hold desirable employees whose appreciation of the two free days each week found expression in the volume and quality of their output. Employers generally were satisfied that the shorter working schedule has had a pronounced effect in raising the morale of the working force

"Objections reported to the five-day week or to certain features of it, were neither so frequent nor so fundamental as the advantages cited in its favor. Employers who had adopted this schedule at the instigation of organized labor as a rule considered it an imposition and were disinclined to see it in a favorable light. Others admitted disadvantages or handicaps, but did not consider them insurmountable. The fact that Saturday is an important day in some industries has made it difficult to accustom purchasers to the fact that the plant is closed on that day.

"A few employers expressed disapproval that some employees accepted other remunerative employment on the day that it was believed should be given to rest and recreation. Others questioned whether the distribution of Saturday hours over the other five days had not made these days too long for best results, especially in the high temperature of Summer and in the longer hours under artificial light in the Winter. In some cases a decline in the quality of work has been attributed to this cause.

"Like most departures from prevailing practice, the five-day week, at least at first, has certain drawbacks. With respect to this issue, however, the disadvantages appear to have been outweighed by the advantages derived. The preponderance of opinion in favor of the five-day week schedule indicates that in most plants reporting it has commended itself to both management and working force.

"The conclusion that any or all industrial establishments could advantageously adopt the five-day week schedule does not follow from the evidence in its favor by a majority of the companies that are qualified from experience to appraise its advantages and drawbacks.

"Whether or not the application of the five-day week will be extended to industry generally and whether such extension would be economically sound and socially desirable are questions that lie in the field of conjecture and opinion and are outside the scope of this study."

E. N. Mattox Resigns

FORT MADISON, Iowa, December 21, 1929.—E. N. Mattox has resigned the post of superintendent of the Hinde & Dauche Paper Company, after more than seven years service in that capacity.

American Writing Paper Co. Changes

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., December 24, 1929.—A number of changes in the high executives of the American Writing Paper Company, Inc., were announced Friday morning at the main offices of the Company in Holyoke. Russell C. Madden, general sales manager has been promoted to the position of vice president in charge of sales; Rufus D. W. Ewing, assistant sales manager has been appointed general sales manager; and Roland B. McDougall, manager of the Papeterie Division, has been made assistant sales manager.

Mr. Madden the new vice president was born in Detroit in 1890, educated in the Detroit and Washington schools, graduating from the Central High School in Washington, D. C. In 1908-9 he was with the sales department of the Hamilton Brown Shoe Company of St Louis. In 1910 he became manager of the city department of the Garnett Allen Paper Company of St. Louis. In 1911 he became manager of the New York office of the Graham Paper Company of St. Louis, a position which he held until 1923 when he became assistant sales manager here, a year or so later being made general sales manager. He is a member of the Rotary Club, Mt. Tom Golf Club of Holyoke and Nayasset Club of Springfield.

Mr. Ewing was born in Enfield and graduated from the Sheffield Scientific School at Yale in 1910. After a year with the Fairbanks Scale Company he became connected with the Tileston & Livermore Company, wholesale paper dealers of Boston. He came to Holyoke in 1912 and worked in the American mills for a year then going to New York as salesman at the New York office. He joined that United States Navy in 1917 being discharged with the rank of lieutenant at the end of the war. In 1919 he became manager of the writing paper section of the American Writing Paper Company and in 1920 was made manager of the New York office. In 1927 he was made secretary of the company and last year elected assistant general sales manager He is a member of the Yale club of New York City, the Colony Club of Springfield and the Mt. Tom Golf Club of Holyoke.

Mr. McDougall was born in Chicago in 1890. He graduated from the University High School and Lewis Institute in that city. From 1912 to 1915 he was with the Reichenback Company of Chicago; from 1915 to 1920 with the Chicago Pneumatic Tool Company of Chicago and from 1920 to 1923 with the Mack Elliott Paper Company of St. Louis when he became associated with the American Writing Paper Company.

The promotions are in line with the announced policy of the Company to promote those in its employ rather than going outside.

International Retains Present News Print Price

The International Paper Company announced through the American Newspaper Publishers Association that the present price of $55.20 a ton for news print would remain unchanged for the first six months of 1930. The announcement said there would be no increase after that date unless a notice of at least thirty days was given to the newspaper publishers.

At the same time the special news print committee of the publishers' association received a telegram from C. R. Whitehead, chairman of the board of governors of the Newsprint Institute of Canada, saying, that the price of $60 a ton for news print recently decided on by some of the larger Canadian news print manufacturers would remain unless conditions of the market changed in the near future.

Gummed Products Opens Cincinnati Office

TROY, Ohio, December 23, 1929.—The Gummed Products Company, of Troy, has opened a new office at 1704 Union Central Building, Cincinnati, Ohio. Edward F. Herrlinger, having disposed of his entire interest in the Union Selling Company, will devote his entire time to the Gummed Products Company in an executive and sales capacity, using the new office in Cincinnati as his headquarters.

EVENTS of 1909!

The Wright Biplane, which established the world's sustained flight records, 1909.

Over 20 Years Ago EBG Pioneered in the manufacture of Liquid Chlorine

The first pouna of Liquid Chlorine produced in the U. S. A., 1907

FRANCE, on the New Year's Eve of 1909. Wilbur Wright, American, launches his biplane into the air for the longest sustained flight in history—two hours and thirty minutes. The world is astounded at the establishment of this pioneer aviation record.

The EBG plant at Niagara Falls, the same year. Liquid Chlorine in the making. And another achievement is registered, the benefits of which are shared today by many industries.

Like the pioneers in aviation, EBG has continually gone forward, working and experimenting toward still greater accomplishment . . . and, displaying the true pioneer spirit, EBG is always ready to apply its knowledge and experience to the greater efficiency of bleaching processes.

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AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Edited by
RONALD G. MACDONALD, Secretary

Trends in Power-Plant Development in the United States and Europe*

By C. F. Hirshfeld[1]

In studying any contemporaneous phase of human activity it is well to start with a fairly intimate knowledge of the history of events leading up to the situation under study. The consideration of developments in the field of power production in this country and in Europe cannot be treated properly without such a survey of that which preceded. For this reason I am going to show you first some graphs which will serve to visualize the direction and extent of progress over a rather lengthy period.

The Rise in Steam Pressures Since 1900

The curve of Fig. 1 shows the way in which the steam pressure used in representative central stations has risen since 1900, practically three decades ago. The data apply particularly to condi-

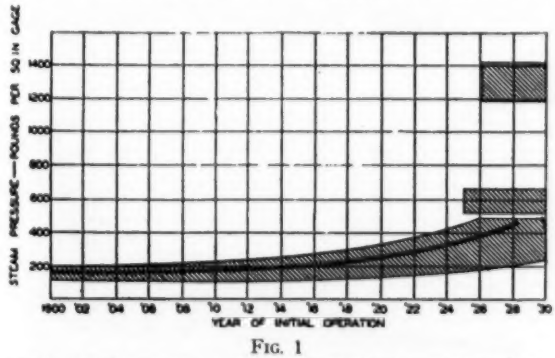


FIG. 1

Increase in Steam Pressures. (Shaded areas indicate approximate limits of central-station practice.)

tions in the United States. The shaded area illustrates the range of good practice.

You will note that we have now arrived at three radically different schools of practice, what we may call the 400-pound school, the 600-pound school, and the 1200-pound school. The lowest of these pressures, which in fact varies between 400 and 500 pound at the boiler drum, is chosen as the highest pressure that can be used safely without reheating at the highest initial steam temperature that it is desired to use and consistent with cost of boiler. The two higher pressures both involve the use of reheat at the present time and are otherwise useless for condensing operation because of the large quantities of water that would be formed during expansion.

The present tendency is to choose the 1200- to 1400-pound range

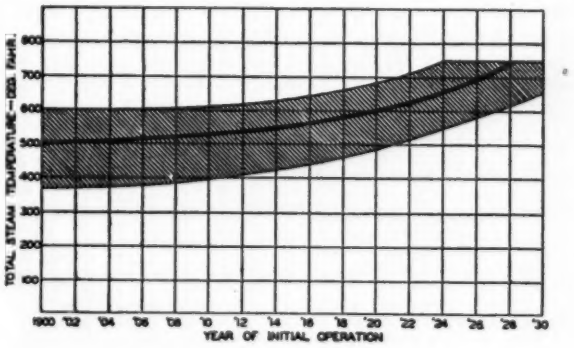


FIG. 2

Increase in total steam temperature. (Shaded area indicates approximate limits of central-station practice.)

in preference to the 600-pound pressure. This appears to be the choice dictated by economic considerations. While the wall thickness required with 1200-pound internal pressure woud be higher than that required with 600-pound and the same diameters, the volumes at 1200-pound are so much smaller than at 600 that the actual weight of material to be purchased and space to be provided work out to the advantage of the higher pressure.

In Europe they have not stopped at 1400 pound but have gone higher with special types of plant to which I shall refer later.

Temperature Rise More Gradual Than That of Pressure

The history of steam temperatures is shown in Fig. 2, with the hatched area representing the range of good practice as before. You will note that while we have gradually raised the temperature, as we have the pressure, there is no such sudden rise of temperature in recent years as has occurred in the case of pressure. At present a total temperature of 750 deg. F. is about the limit

* A lecture delivered at the S. P. E. E. Summer School for Mechanical Engineering Teachers, Purdue University, June 27 to July 18, 1929. Mechanical Engineering, October, 1929.

[1] Chief, Research Department, Detroit Edison Co.

in this country, although some engineers are speculating on the possibility of raising this value by 50 to 100 deg. In Europe there are several experimental and semi-commercial plants operating at temperatures well above those that we now regard as the limit in this country. The temperatures in some of these plants run up to about 900 to 950 deg. F. as a maximum, and a plant known as Langerbrugge, in Belgium, is actually operating commercially with a steam temperature in the neighborhood of about 150 to 200 deg. F.

The maximum temperature is dictated primarily by what one regards as the safe limit for available metals. We in the United States have assumed until quite recently that 750 deg. F. is as high as it is safe to go with tubes made of low-carbon steel. We are now beginning to believe it possible to raise this temperature by 50 to possibly 100 deg. F. with the same tube material. In Europe they have been much more optimistic, and this fact illustrates a difference in mental attitude. It is not that Europe has better metal than we have, that the European engineers know more about the properties of metals than we do, nor that metal behaves any differently in Europe than it does here. The explanation lies in a radically different conception of the relative importance of certain things.

We place great weight upon the degree of availability of our equipment. Satisfactory performance with us means a very high degree of availability, say, between 85 and 95 per cent on an annual basis. We also recognize our inability to control conditions perfectly at all times and our inability, in general, to obtain men who will be forever mentally alert and watching every detail of control. As a result we allow ourselves a very large factor of safety. There is no doubt but that one can build a superheater of low-carbon steel which will give satisfactory operation at temperatures in the neighborhood of 900 deg. F. at least. But we have preferred to have a factor of safety of about 150 to 200 deg. F.

In Europe, and particular on the Continent, they attack the matter from a different angle. They place more stress upon the available thermal efficiency and less upon troubles. They place more faith in their ability to control as predicted during design. They place more weight on laboratory showings because of their high regard for scientific laboratory work and because of a smaller practical experience than we bring to bear. As a result you will find that continental European engineers are apt to provide much smaller factors of safety than we are.

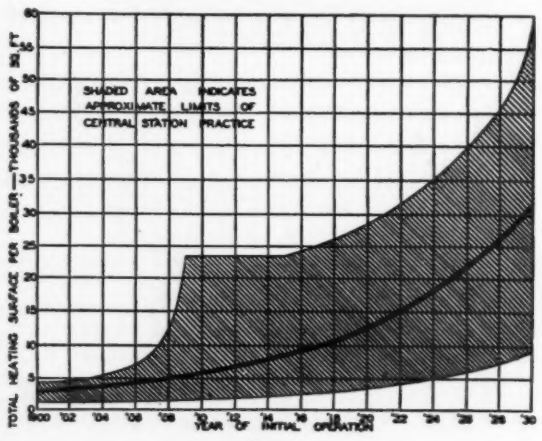

SHADED AREA INDICATES APPROXIMATE LIMITS OF CENTRAL STATION PRACTICE
TOTAL HEATING SURFACE PER BOILER—THOUSANDS OF SQ. FT.
YEAR OF INITIAL OPERATION

FIG. 3

Increase in physical size of boiler units.

The increases of steam pressure and temperature just outlined have resulted primarily from efforts to obtain higher thermal efficiencies. Contemporaneously we have been following other lines of progress which were directed toward reduction of invested capital and of the necessary labor per unit of capacity and per unit of output, respectively.

Increase in Output per Boiler Unit

One of the best examples of this second type of progress is illustrated in Fig. 3, which shows the increase in total heating surface of single boiler units. Starting in 1900 with units of the general magnitude of 4000 sq. ft., we have arrived at common practice about eight times as large and in exceptional cases, more than fourteen times as large. However, heating surface is a poor measure of the advance since it is really the output per boiler unit that counts. This is shown in Fig. 4. Starting at 1900 with 10,000 to 20,000 pound steam per hour we have now reached over 300,000 pound in representative practice and as high as 800,000 pound in exceptional cases.

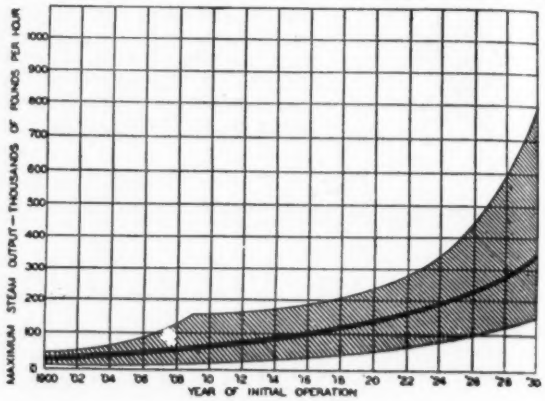


FIG. 4

Increase in steaming capacities of boiler units. (Shaded area indicates approximate limits of central-station practice.)

The number of men required per boiler unit has remained substantially constant during this tremendous change, so that the pounds of steam produced per man-hour has increased tremendously. Incidentally, the thermal efficiency of the boiler room has risen in this period from values between 65 and 75 per cent to values between 85 and 90 per cent, so that there has been a marked change in this respect also. Part of this is traceable to the use of larger units, but a much greater part is traceable to improved combustion and heat-absorbing equipment.

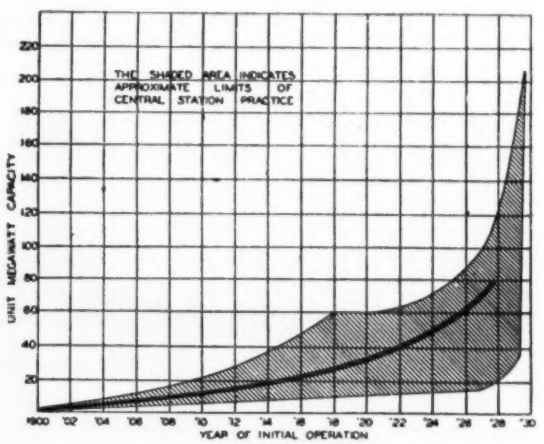

THE SHADED AREA INDICATES APPROXIMATE LIMITS OF CENTRAL STATION PRACTICE
UNIT MEGAWATT CAPACITY
YEAR OF INITIAL OPERATION

FIG. 5

Increase in main unit turbine sizes.

There is a very appreciable capital saving through the use of large boiler units. It would require a long consideration of details to show how this comes about. It results from economy of floor and building space, economy of piping, fittings, and parts, economy in use of furnace walls, and things of such sort as well as from—or in some cases in spite of—changes in the actual cost of the boiling vessel.

Growth of Turbine Capacity

The same sort of thing has happened with respect to the steam turbine, as shown in Fig 5. Starting at 1900 with reciprocating steam engines at their zenith and the turbine a matter of speculation, we find multi-cylinder units of over 200,000 kw. capacity installed in 1929. The single-barrel unit is built in sizes over 100,000 kw. capacity at present. The same sort of results obtained through the use of larger boiler units have been obtained in the turbine room through the use of larger turbine units and associated equipment. As in the case of the boilers there has been a remarkable increase in turbine-room thermal efficiency, but here also increase of size has been responsible for only a small part of this improvement.

Reduction of Heat Requirement per Unit Output

As a sort of summary of the development of thermal efficiency, Fig. 6 is presented. It shows the way in which the thermal performance per kilowatt-hour send-out has increased during a comparatively short period of time. It is interesting to note that the latest developments of the mercury-vapor equipment indicate the possibility of reaching at least as low as 10,000 B.t.u. per kw-hr., and probably lower. The attainment of 10,000 B.t.u. by 1930 would represent a decrease in two decades to about one-third the heat requirement at the beginning of the period. When it is realized that this has been done with proper regard to preserving the necessary balance with respect to all other factors concerned, it becomes obvious that it is a truly notable achievement. But, it does not stand unique; achievements of similar magnitude have been made in many other fields of human endeavor. And it is this grand accumulation of advances that has so quickly and completely changed the world we live in and the conditions under which we live.

Heat Consumption of Turbines

We may now study in greater detail the significance of higher steam pressure in a terminal sense. For this purpose I shall use a diagram prepared by Dr. Münzinger[2] of the A. E. G. which is reproduced in Fig. 7. The upper three curves show the theoretical heat consumption of the turbine at different initial pressures and three initial temperatures when operating without bleeding, that is, without regenerative feedwater heating. The lower

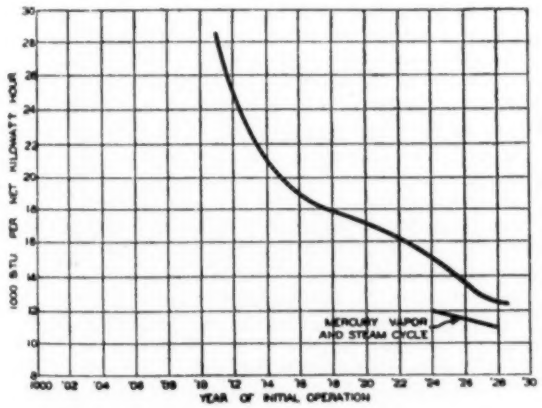


FIG. 6

Thermal economy of plant's operation on 50-60 per cent annual load factor.

group of three curves shows similar values with regenerate feed heating in two stages.

It is to be noted first that the mere increase of pressure in the higher ranges is not particularly effective. Thus points A_1 and A_2 indicate a gain of 3.4 per cent for an increase of 200 pound from 400 to 600, while points B_1 and B_2 indicate a gain of only 0.7 per cent for a similar numerical increase of pressure starting at 2000 pounds per sq. in.

It is also important to note that as the pressure is increased at any given initial temperature the quality of the exhaust decreases. We do not yet know how far we may go in this direction, but present practice in the United States leans rather strongly toward limiting the moisture in the exhaust to some value not greatly in

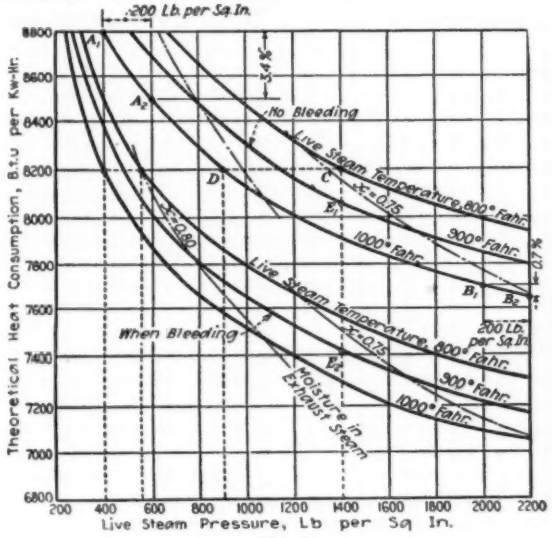


FIG. 7

Theoretical heat consumption per Kw-hr. with and without bleeding, at different line steam pressures and temperatures.

excess of 10 per cent. High initial pressure alone works against the attainment of high commercial efficiency because of the increasing losses resulting from excessive moisture in the low-pressure stages of the turbine and because of the excessive wear to be expected. High initial temperature works in exactly the opposite direction.

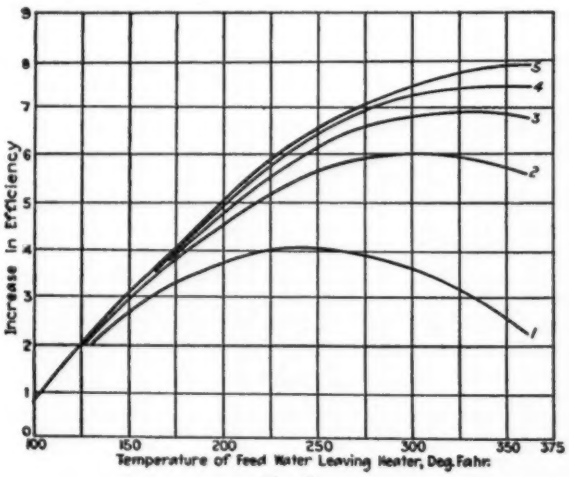


FIG. 8

Increase in efficiency at various temperatures of the heated feedwater and with varying number of extractor points.

The most striking thing shown by this chart is the remarkable gain that may be achieved by regenerative feedwater heating. Thus if we consider the points indicated by circles on the 8200-B.t.u. line, we find that the performance indicated at 400 pounds and 1000 deg. F. and at 500 pounds and 800 deg. F., both with *two-stage feedwater heating,* is the same as that obtainable at 900 pounds at 1000 deg. F. and at 1400 pounds and 800 deg. F. without bleeding.

[2] "Fuel Control in Electric Power Stations," a paper delivered before the Institute of Fuel on Nov. 22, 1928. See the Journal of the Institute of Fuel, vol. 2, no. 5, October, 1928, p. 55.

In addition to this thermal advantage, bleeding for feedwater heating decreases the necessary size of the low-pressure end of the turbine, thus raising the limit of size which may be constructed with single flow, and it also decreases very materially the size of condenser and the amount of circulating water that must be pumped.

Thermal Gains Obtainable by Regenerative Feed Heating

In Fig. 8 are shown the thermal gains obtainable by different degrees of regenerative heating in various numbers of steps for initial conditions of 850 pounds at 800 deg. F. and exhausting to vacuum 7, all as developed by Dr. Munzinger. It is interesting to note that one can go too far in raising the temperature in this way, and it must be remembered that this diagram does not take into account the boiler-room performance. The curves indicate that little gain is shown with more than three bleeding stages. When pressure drops and necessary temperature heads and investments are brought into the picture it is generally found that the use of two or at most three bleeder stages represents the best practice, although it must be remembered that the number ought to increase as the initial pressure increases.

With the maximum steam temperature now regarded as safe it is not found desirable to exceed a certain steam pressure without resorting to reheating at some point during the expansion. With a limiting steam temperature of 750 deg. F. the limiting pressure is in the neighborhood of 475 to 500 pounds. Reheating has therefore been resorted to in both this country and Europe as a means of utilizing the higher steam pressures. It is not commonly realized that the thermal gain obtainable by going to these higher pressures lies very largely in the greater range of regenerative feedwater heating and not in the reheating. The latter ought

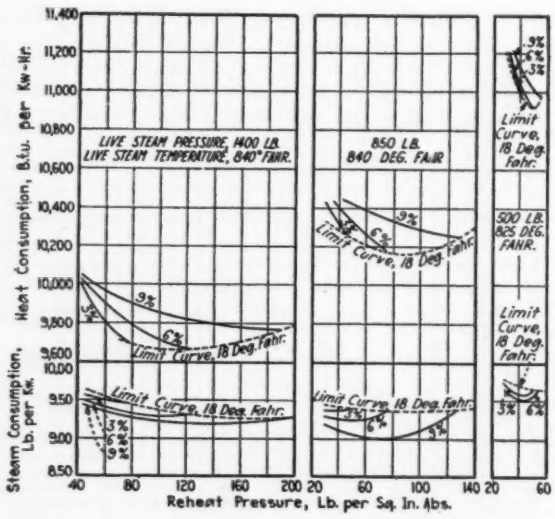


FIG. 9

Heat and steam consumption at different reheat pressures and different moisture contents of the exhaust of the turbine.

therefore to be regarded more as a means of making the former possible than as of primary importance of itself.

There are two schools of thought regarding the method to be used for reheating. One advocates return of the steam to gas-heated reheaters in the boiler room, and the other the use of steam-heated reheaters in the turbine room. At present it appears that the first method works out well with 1200-pound equipment, and the second method with 600-pound equipment. This is possibly explainable by the smaller volume of the higher-pressure steam and the smaller parts that result.

It should also be noted that there is still a lot of theoretical work to be done in the field of reheating. There are so many variables concerned, so many possibilities, and such wide differences in investment required, that it will probably take several years more to completely analyze the problem from the theoretical and semi-commercial angles.

Thermal Comsumption of Turbines Under Certain Assumed Conditions

One interesting study, again due to Dr. Münzinger, is shown in

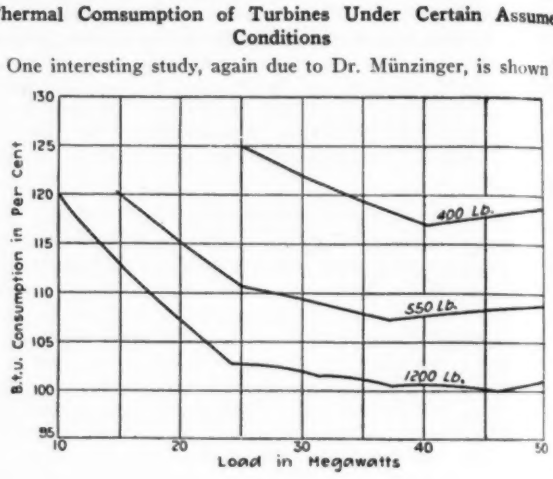


FIG. 10

Theoretical economies attained at various steam pressures with a 50,000-Kw. turbine.

Fig. 9. He has developed the thermal consumption of the turbine under certain assumed conditions. The principal conditions are: several temperatures and pressures as shown on the diagram, live-steam reheating, three-stage feedwater heating, and 18-deg. F. difference between reheating and reheated steam, and several different moisture contents in the exhaust. It is of interest to note the very large number of variables concerned and the wide differences in the results.

The results of a somewhat similar study as applied in a real case are shown in Fig. 10. These graphs were prepared during the preliminary design of the Holland Station[3] and show the theoretical economies obtainable with what was assumed to be the commercially best arrangement in each case. I show you this set of graphs to point out two things. First, the range between best points at 1200 pounds and at 400 pounds is only of the order of 16 to 17 per cent in this theoretical study. Under actual operating conditions the performance of the 1200-pound plant is probably only about 10 per cent better than that of its 400-pound competitor. Second, it is necessary in most real cases to study not only conditions at maximum output or conditions at the best point, but also conditions throughout the entire operating range. You will note that the high-pressure graph is much more nearly flat over a very wide range than is either of the others. I am not prepared to say that this is an inherent characteristic, suffice it that the calculations came out in this way in this case.

In Fig. 11 are shown the results of another study made by Dr. Münzinger. Since this diagram gives total costs it was necessary for Dr. Münzinger to determine the required investments for the different conditions studied. The plant is conservatively designed, that is, allowances for spares, operating facilities, and such are generous. It contains approximately 360,000 kw. installed capacity. The investment is converted to terms of plants having the same net output. If the investment in a 500-pound plant be considered 100 per cent, then his figures show 104.3 per cent for the investment in an 850-pound plant and 109.9 per cent for a 1400-pound plant. In so far as one can judge from the rather meager data available, the ratios would not be very different in the United States at present, although the cost of 1400-pound equipment appears to be dropping as experience is accumulated.

[3] Power Plant Engineering, March 1, 1929.

The scales used in Fig. 11 are such that if the vertical scale is divided by the lower horizontal scale, the result is the cost of each kilowatt-hour of sendout.

It is interesting to note the comparatively wide range in which the three widely different pressures do not give materially different results. It is this fact that has made it so difficult to determine by calculation in advance just what pressure is best under a given set of circumstances.

From what I have said thus far it is obvious that there is a marked trend toward higher steam pressures, and, to a lesser extent, toward higher steam temperatures. I think it well to say at this point that there is still a marked difference of opinion among engineers regarding the proper pressure for different conditions. It appears to be definitely proved that the 1200- to 1400-pound plant as now built in the United States is a paying proposition with a reasonably high fuel price, say, $4.50 to $5.00 per ton of 13,000- B.t.u. coal and a reasonably high capacity factor, approximating "base-load conditions." At least some of the executives

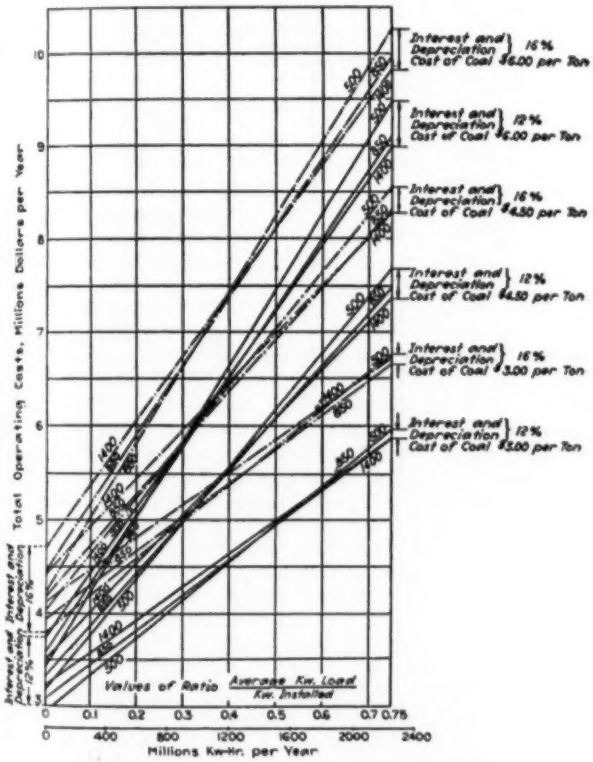

Total Operating Costs, Millions Dollars per Year
Interest and Depreciation 16% Cost of Coal $6.00 per Ton
Interest and Depreciation 12% Cost of Coal $6.00 per Ton
Interest and Depreciation 16% Cost of Coal $4.50 per Ton
Interest and Depreciation 12% Cost of Coal $4.50 per Ton
Interest and Depreciation 16% Cost of Coal $3.00 per Ton
Interest and Depreciation 12% Cost of Coal $3.00 per Ton
Interest and Depreciation 16%
Interest and Depreciation 12%
Values of Ratio Average Kw. Load / Kw. Installed
Millions Kw-Hr. per Year

FIG. 11

Total annual operating costs of a plant of 360,000 Kw. installed capacity and different utilization factors at different line steam pressures.

and engineers who have had experience with such plants claim that it is not limited to base-load conditions

Changes Brought About by Development of High-Pressures

The development of high-pressure equipment has brought about many changes throughout the plant which are generally overlooked until one comes to the making of a complete study. Reference has already been made to the way in which condenser size is reduced by regenerative feedwater heating. It is obvious that the reduction will be greater the higher the initial steam pressure, with all other things equal. Changes in the boiler room are just as significant, possibly more so.

The rapid decrease in the numercial value of the latent heat of evaporation with increasing pressure is well known. The drop in the range from 400 pounds to 1200 pounds is of the order of 20 per cent. In addition, the high-pressure steam plant is thermally more efficient than the low-pressure steam plant, so that less heat has to be supplied the turbine room per unit of output. Further, the saturation temperature increases as the steam pressure increases, and the attainment of maximum economy in the turbine room dictates heating the condensate with bled steam up to values which increase markedly with increase of pressure.

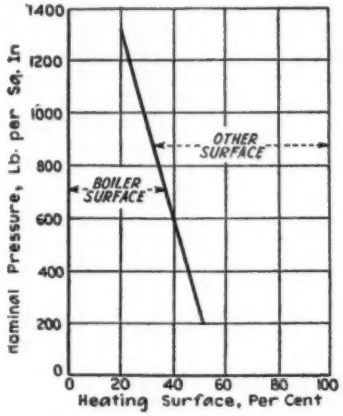


FIG. 12

Boiler heating surface as percentage of total heating surface.

These things all react in the boiler room in peculiar and definite ways. The principal effects are:

a The evaporating surface is reduced as the pressure increases,, due to lower latent heat and less heat to be produced.

b The products of combustion leave the evaporating surface at higher temperatures, the higher the pressure.

c The temperature of water entering the economizer increases with increasing steam pressure, and an economizer therefore becomes more and more unable to reduce the flue gases to the low temperature desired for high economy.

d An air preheater becomes more and more necessary as the pressure increases in order to span the range between economizer exit gas temperature and the desired low temperature of stack gases.

No one can tell just how this combination of factors will result in any given case. But, in general, the boiler surface decreases markedly as the pressure rises and the total extent of heat-absorbing surface increases. The latter effect appears to occur in such a way that a peak value is reached at some elevated pressure and beyond that value the total surface again decreases. This is as yet highly speculative, however.

Charge of Surface Distribution With Pressure

In Fig. 12 I have endeavored to give an idea of the way in which the distribution of surface changes with pressure. It is assumed that both economizer and air preheater are used and that the boiler-room efficiency sought is in the neighborhood of 90 per cent. The line drawn in the figure represents an average of the values found in actual cases. The range at any pressure except the highest is very wide, so the line should be interpreted more as indicating a trend than as representing absolute values.

Present Type of High-Pressure Plant Probably a Transition Type

I have felt for some time that the present type of high-pressure plant is probably nothing more than a transition stage. To me it seems far more logical to do one of two things: The first is to develop materials capable of withstanding much higher temperatures and then to build up to the highest pressure which is usable with such temperatures without reheating. The other is to abandon our present attempt to adhere to more or less standardized types of equipment, to develop new types capable of use at very

high pressures such as 2000 pounds or higher, and to obtain the maximum advantage of decrease in overall size, and of range for regenerative feed heating. The first possibility seemed to me to be the most promising at present, in that it appeared capable of commercial development with the minimum changes from standard equipment. For this reason I have advocated advance along such lines, and the company with which I am connected is now engaged in a rather extensive and expensive high-temperature experiment. We shall shortly have in operation a 10,000-kw. turbine designed for an initial steam temperature of 1000 deg. F., and we hope to have available at that time a superheater capable of delivering steam at such a temperature. As a matter of fact, we have had in experimental operation for some time a superheater delivering steam at 1000 deg. F. or higher and we have not yet discovered any insurmountable obstacles.

If we are successful in the use of such temperatures as 1000 to 1100 deg. F. it will be logical to step up the steam pressure to some such value as 800 to 900 pounds per sq. in.—we do not yet know just what. After that the next step will probably be a further increase of temperature, followed by a corresponding increase of pressure.

Several European engineers have followed more closely the second possibility outline above. They have struck out boldly into entirely new principles, arrangements, and designs. This may be attributed partly to the type of mind and the characteristic method of attack, and partly to differences in the conditions there and here.

They all start with certain assumed upper temperature limits, as dictated by the metal. They all start with the idea that the conventional type of boiler is not adapted to very high pressures for

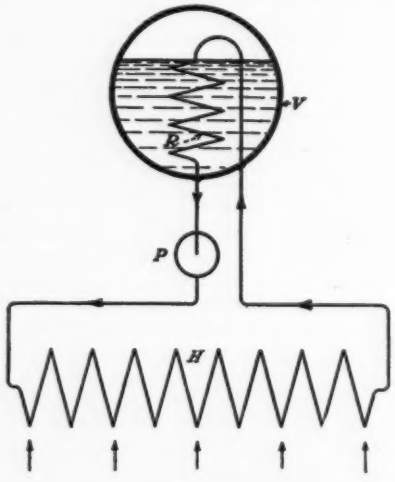


FIG. 13

Indirect steam generation by means of mechanically circulated heat carrier. (H—heated pipe coil; P—circulating pump; R—vaporizing coil; V—vaporizer.)

one reason or another. From these on they travel their separate and devious ways.

In the early days of these development I doubted the need of any such contraptions. Recently, however, I have had occasion to change my mind. It is becoming obvious that at a pressure of 1400 pounds the more or less conventional American type of design begins to approach a limit. Anything short of perfectly non-scaling water is certain to lead to trouble very quickly. Any excessively intense flame impingement upon furnace-wall tubes must have the same result. There are also other features, such as very delicate balances in circulation, which indicate approach toward a practical limit not very far above 1400 pounds pressure with conventional types of equipment.

Of course the mercury-vapor plant developed in this country is in a sense a solution of the high-pressure-steam problem. But it is a solution which is effective through the elimination of high steam pressure by the addition of many complicating features. It attains the desired efficiency but at a cost in complication and what now appears to be a rather large increase of investment.

Early Attempts to Overcome Difficulties of High-Pressure Steam Generation

One of the early attempts to overcome some of the difficulties of

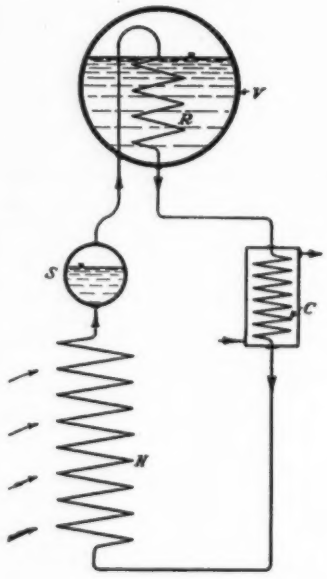


FIG. 14

Schmidt-Hartman steam generating process. (S—steam collector; C—cooler.)

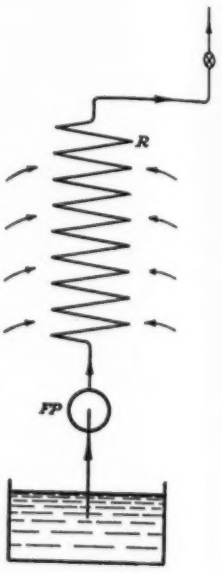


FIG. 15

Steam generation with forced circulation of feedwater by means of pump. (FP—feed pump.)

steam generation, and particularly high-pressure steam generation, is shown diagrammatically in Fig. 13. A heat carrier is circulated in a closed system by means of a circulating pump. Various substances from mercury down have been suggested as the heat carrier, but none as yet have given great promise. Each is handicapped in one way or another. In addition, scale-forming water tends to encrust the outer surface of the coil in the drum which forms the generator, thus decreasing the effectiveness of the heating surface.

The device shown diagrammatically in Fig. 14 has already achieved some success in Europe, particularly for locomotive work. The heat carrier is distilled water, so that the surfaces subjected to furnace heat and furnace gases are maintained absolutely clean on the water side. Any grade of water may be used in the boiler proper, that is, in the large drum shown on the diagram, but if it carries incrusting solids the heat transfer coils *R* are rapidly reduced in effectiveness. Moreover the circulation of the heating medium is effected by convection as in boilers of the ordinary type, and is subject to all the uncertainties that are to be anticipated in such boilers. While this arrangement may meet a need on European railroads and even possibly on railroads of this country, I do not look forward to any degree of success in stationary practice. The investment appears to me necessarily out of proportion to the rather questionable advantages.

In Fig. 15 is shown another suggestion. This is really very old, having been used in steam-driven automobiles thirty years ago and being still in successful use for such purposes. It has never been very successful in large sizes because of the great difficulty experienced in properly coordinating the rate of water feed and the rate of combustion with the demand for steam. As there is practically no thermal storage in the device such coordination must be practically perfect, that is, instantaneous adjustment is

required. Much work is now being done along such lines and great advances are being made, but I do not look for any great degree of success. On the other hand, I do believe that we are gradually preparing the way for a small-tube, forced-circulation boiler with ample thermal for use at high pressures.

The Benson Boiler

The diagram of Fig. 15 also serves as a schematic diagram of the Benson boiler which is well known through descriptive articles in the literature. If the throttle valve above the heat-transfer coil be so arranged as to maintain a pressure above the critical, namely 3200 pounds per sq. in., the water receives all its heat while in the liquid state and is converted suddenly and completely into steam after passing the throttle. The Benson type of plant has been tested very thoroughly over a period of several years by one of the large German manufacturers. That firm is satisfied with the results obtained and is endeavoring to sell plants of large size. In fact, a plant has just been ordered by an electricity supply company in Belgium. The capacity is quoted as 320,000 pounds of steam per hour.

I have examined the experimental plant twice and I have discussed its operation, control, and cost with its enthusiastic backers. I have not been able to become very enthusiastic about it and I should hate to be forced to put in such a plant today. I may, however, live to change my mind as I have done many times in the past.

The Löffler Steam-Generating Plant

In Fig. 16 is shown diagrammatically the type of plant invented by Dr. Löffler. All of you are probably familiar with it through descriptions which have appeared from time to time in the literature. I have discussed this plant with its inventor and I am certain that he will discover within the next few years many difficulties that he does not now dream of. However, he has had reasonable success with his first, small installations, and a plant of large size is now being installed on a commercial basis. I was at first very skeptical about the possible success of the Löffler principle, but of late I have begun to believe that it contains the

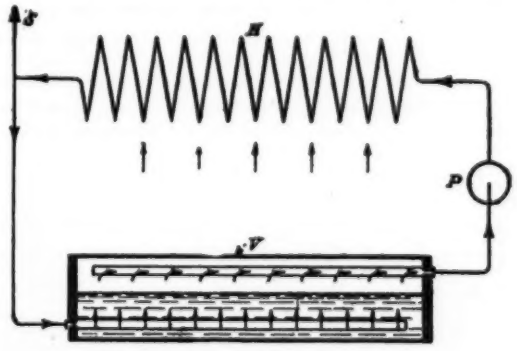


FIG. 16

Steam generation by means of positive steam pumping. (S—operative steam; H—heated coils; P—circulating pump; V—vaporizer.)

possibility of success under American conditions. It will have to be modified greatly, but I believe that this can be done.

An interesting fact about the Löffler principle is shown in Fig. 17. The curve represents the work required to pump the steam, expressed as a percentage of the work which could be obtained by expanding in a condensing plant all the steam generated in the boiler. It will be observed that a pressure of 750 pounds is indicated as a minimum for this type of plant, and that the efficiency increases rather remarkably as the pressure rises above that figure. I understand that Dr. Löffler contemplates operating in the neighborhood of 1800 pounds.

There is another factor which must be considered in connection with high-temperature equipment. I have already spoken of the critical region which is approached in the case of boiler tubes, and particularly furnace-wall tubes operating at 1400 pounds. Since the saturation pressure mounts with the steam pressure, it is obvious that the metal temperature of such tubes mounts similarly. The situation is just reversed in the case of superheater tubes. The effect of increasing steam pressure, with a given superheat temperature and all other things equal, is to reduce the metal temperature, obviously because of the greater density of the steam. This phenomenon plays directly into the hands of Dr

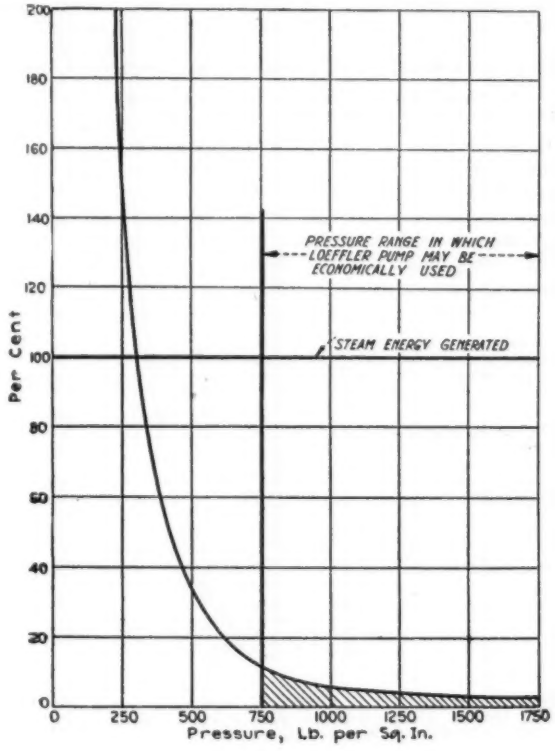


FIG. 17

Relation between energy required for steam circulating pump and operating pressure. (Pump energy expressed as percentage of total steam generated.)

Löffler, who confines his high-temperature heat transfer to superheating surface. And it should be noted that the effect of pressure is particularly marked at high steam pressures with radiant-type superheaters, a feature essential to the success of the Löffler plant.

Further Progress Contingent on Ability to Operate Safely at Higher Temperatures

It was suggested that I give you in this address some indication of work along new lines which would be of use to the industry and possibly of interest to you as scientifically trained engineering investigators. You will have learned from what I have already said that I believe our further progress in the improvement of power generation is largely contingent on our ability to operate safely at higher temperatures. Thus far this has been considered to be a matter of discovering new steel alloys capable of withstanding such temperatures "without creep." This view has been reached quite logically on the basis of published data. The curves of Fig. 18 will serve as an example. The long curves in the center represent data published by the U. S. Bureau of Standards. They were first published as "creep limits," but later explained as the unit fiber stresses which would cause I per cent deformation in 1000 hours. One of the lower curves represents similar data for a creep of 0.1 per cent in 1000 hours. I have added my best guess

at the values for 1 per cent creep in the case of 0.13 carbon steel and 0.38 carbon steel.

You will note that unit fiber stresses between 2500 and 5000 pounds per sq. in. at 1000 deg. F. would appear to cause all these materials to creep at an alarmingly rapid rate. If you will do a bit of calculating you will find that such fiber stresses do not have many possibilities for high-temperature design at high pressure.

The company with which I am connected has sponsored an extensive research in this field during the past five years or more and is still far from the end of its program. I can tell you some things that may serve to start you thinking along new lines and possibly fire the imaginations of a few of you to the place where you will be willing to undertake constructive work in this field.

Creep of All Metals at All Temperatures Under All Loads

It is popularly supposed that there is such a thing as a "creep limit." This is interpreted to mean that for each material at each elevated temperature there is a fiber stress which will not cause continuing deformation, no matter how long sustained. It is my present view that there is no such thing as a creep limit. It is also my present view that all metals creep at all temperatures under all loads. That probably sounds to you a bit revolutionary, but I am firmly convinced that it is true.

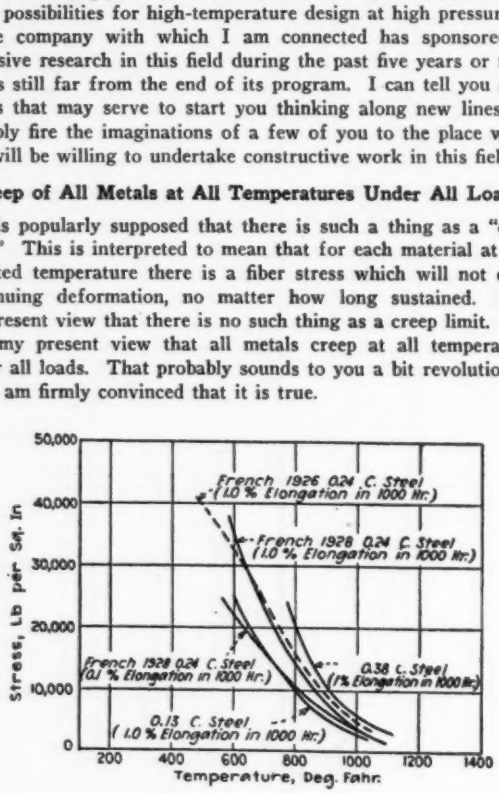


FIG. 18
Data on creep tests of steel.

As I see things now, we always deal with the resultants of several different effects when we subject metal to strain. Speaking first of phenomena at normal temperatures with which you are all familiar, when we subject metal to strain we deform it. Experiment and experience show that we also "strain harden" it. Experiment and experience also show that by then elevating the temperature we can remove the strain hardening, that is, anneal it. It is also known that the rate of annealing increases rather rapidly with increase of annealing temperature.

From my present point of view this state of affairs represents a much more universally applicable set of laws than most of us have heretofore assumed. I believe that the relief of strain hardness occurrs naturally at all temperatures. It takes tens or hundreds or possibly even thousands of years in the case of steel at room temperature, but it does occur. Therefore, when we subject metal to continued strain of any magnitude and at any temperature, creep occurs. When strain hardening is automatically relieved at a rapid rate our present methods of test enable us to determine the fact that creep occurs; otherwise it does not appear to occur.

We are now advancing into a region in which we shall probably have to work with metal which creeps far enough and fast enough to make it necessary for us to recognize the fact. This need not worry us particularly because after all it is only necessary that any given part does not deform enough to terminate its usefulness before it has served a reasonable life. In the case of many parts of our equipment this requirement permits a very great degree of deformation.

A New Mechanics of Materials Necessary

Now tell me, which of you is able today to design machine or other parts on a creep basis and where would you obtain your basic data if you were able to? Some few attempts have been made to devise design formulas based on creep theories rather than the theory of perfect elasticity. They are exceedingly interesting, particularly because they turn the world more or less upside down.

For example, a thick-walled tube can withstand safely as much as 20 per cent more internal pressure according to the creep theory than it can according to the elastic theory of behavior. Again, according to the elastic theory, the transfer of heat inwardly through the wall of a tube subjected to internal pressure makes conditions worse with respect to the fiber stress in the tube wall, whereas according to the creep theory the results are practically opposite.

I firmly believe that we have now arrived at the place where we must devise and publish a new mechanics of materials and where we must perform the experiments required to produce the necessary design constants. I can assure you that it is no easy task, but I can assure you also that there is nothing impossible in it. I leave the suggestion with you, and I hope that it may strike a responsive chord in some of you.

TAPPI'S First Contributing Member

A new group of Technical Association members was provided for by amending the Articles of Organization at the last annual meeting. Members of this group include companies in the industries allied to the pulp and paper industry such as machine builders, chemical supply houses, etc.

Edgar Brothers Company of Metuchen, N. J., has the distinction of being TAPPI'S first contributing member. This company has come forward with very rapid strides in the last few years as a result of its development and the acceptance by the industry of American clays for coating and loading paper.

About fifty years ago Charles S. Edgar, founder of the Edgar Clay Companies, pioneered in producing washed clays. As might be expected he first developed clays for the pottery and porcelain manufacturers, using Florida clays at first. Following this he developed Georgia clays for the paper mills to use as a paper filler. After his death D. Raymond Edgar, president, and Harold T. Edgar, treasurer, have carried on the development of paper clays.

So great has become the demand on the part of the paper industry for a superior coating and loading clay that Edgar Brothers Company has found it necessary to establish a research laboratory at Metuchen, N. J., to study ways in which clay may be improved and to make available to paper manufacturers and coaters a complete technical service to help them solve problems.

Edgar Brothers Company is now said to produce, under one management, more washed and untreated clay than any one company in the world. The New York headquarters is located at 50 Church street.

Joint Meeting Is Held at Kalamazoo

KALAMAZOO, Mich., December 24, 1929.—A joint meeting was held Thursday evening at the Columbia hotel of the Michigan Division of the American Pulp and Paper Mill Superintendents Association and the Cost and Technical Association of the Paper Industry. Following dinner two technical papers were presented. Paul Torie, of the Michigan Paper Company, Plainwell, read a paper on "What Control a Chemical Engineer Should Have on Beater Finishes."

Louis Dolan of the Kalamazoo Vegetable Parchment Company, handled the subject: "Various Types of Beater Bars and the Advantages of Each." A discussion followed each paper.

The Decomposition of Cellulose by Treatment with Alkalis at High Temperature *

By Emil Heuser[1]

Some months ago some periodicals contained a short note saying that the soda pulp mill in Regensburg, Germany, had been taken over by an English consortium with the intention to take up again the manufacture of soda pulp and at the same time to isolate the by-products which are formed when recovering the sodium salts for preparing fresh cooking liquor.

This mill is notable as being the only one employing the so called Rinman-Process, a process of destructive distillation of the evaporated waste caustic liquor taken from the digesters in which the wood chips are converted into pulp.

The note mentioned interested me very much because it brought back to me the time when I, some years after the war, studied this process myself in Regensburg and, still further back to the year 1916 when I took part in laboratory experiments in Berlin and in large scale experiments in Sweden.

It was in this country that the Rinman process was given the first trial, and the experience gained from those studies then became the basis upon which very soon the Regensburg mill was built up. This mill originally was designed for pulping wheat straw by means of the soda process but some years after the great war it was redesigned for using wood instead of straw and for producing a soda kraft pulp, therein applying the Rinman process for the recovery of the sodium salts.

The fact that the Regensburg mill has resumed operation directs the attention of pulp makers and chemists again to the Rinman process, and particularly those chemists who are interested in the practical application of Rinman's ideas and who agree to the principle that there should not be wasted any part of a raw material which has once entered any kind of manufacturing process.

The Rinman process is one of the possible solutions of the waste liquor problem as far as the soda pulp process is concerned.

By the recovery process of the soda pulp mill, the organic matter of the waste liquor is burned to ashes in order to obtain the soda salts for preparing the fresh cooking liquor.

During this process which may be regarded as a process of destructive distillation, the organic matter produces gases and a series of valuable volatile substances which, by the usual process, escape into the air and consequently are lost.

Rinman's Process

The Rinman process, however, does recover those products by the application of condensation, and conducting the distillation process somewhat differently, chiefly in two respects:

First, an addition of burnt lime is made to the waste liquor before it is evaporated to a consistency of molasses or the like, whereafter, it is subjected to the destructive distillation; this addition transforms part of the primarily formed substances into more valuable ones.

Second, the process of distillation is given such a direction as to avoid as much as possible the formation of gases, and, thus to increase the yield on condensable products.

The dry distillation of the thickened waste liquor is carried out in a way very similar to the carbonizing of wood in retorts, except that the mass is exposed in thin layers to the heating gases and that during the process, steam is introduced into the heated mass. The products of combustion then enter an effective cooling system and leave it as a raw distillate from which, then, the individual products are separated out by the usual process of rectification.

In this way are obtained chiefly: methyl alcohol, acetone, butanone, higher ketones, light oils and heavy oils, products which are used in the different industries.

The source of these products naturally must be found in those substances which are dissolved from the wood when it is cooked with caustic soda solution at 5 to 6 atmospheres (73-88 pounds pressure), corresponding to 152-159 deg. C., for 8 to 9 hours in the digester. As the yield on pulp from this process does not amount to more than 50 per cent, the other half of the wood is to be found in the waste liquor, and this part chiefly consists of cellulose and non-cellulosic carbohydrates such as pentosans and hexosans.

Besides, we find decomposition products of these and other constituents of the wood formed under the influence of the cooking process, consisting partly of organic acids, partly of products the nature of which is still unknown.

Chemism of the Process

For the chemist and particularly the cellulose chemist, it has always been an attractive problem to study the chemism of this process which from such complicated substances as lignin, cellulose, and carbohydrates leads to the simpler final products as mentioned before. With this point of view, I started some research along this line, in the year 1922, with one of my collaborators, Dr. H. Frankenbach, who unfortunately died some years ago and who was a very capable and promising young chemist.

The idea of those experiments was to find out the individual sources of the final products; in other words, which of the final products were to be traced back to the lignin, which to the cellulose, and which to the pentosans and hexosans.

It was a priori to be expected that the methyl alcohol owes its formation to a simple saponification of methoxy groups attached to the lignin, a reaction which, when applied to lignin isolated from wood leads, in fact, to the same product.

The lignin of the waste liquor is very likely also the source of some of the constituents of the light and most of those of the heavy oils, the yield of which amounts to about two-thirds of all products obtained.

Consequently acetone, butanone, and some of the higher ketones would originate from the cellulose and probably from the other carbohydrates, and Rinman assumes also that, by dry distillation these substances are first decomposed to organic acids which then, as sodium salts and still better as lime salts, yield acetone and homologous members as well as higher ketones.

In view of the fact that the Rinman process draws attention again as to its practical possibilities, it might be interesting to report to-day on the results of those experiments—although they were performed almost seven years ago.

As we wished to find out the individual sources of the final products, we had to take the wood constituents separately and to expose each by itself to conditions as they are applied in the Rinman process, to the mixture of substances dissolved in the waste liquor.

Experimental Objectives

For some particular reason we first made the cellulose the

* Paper read at meeting of the American Chemical Society, Cellulose Division, Columbus, Ohio, April 30, 1929.

[1] Member TAPPI; Manager of Research, Canadian International Paper Company, Hawkesbury, Ontario.

subject of our studies, and it is the result of these studies which I wish to present before you.

In accordance with the conditions of the Rinman process, we had to perform three operations; first, dissolving of the cellulose in a caustic soda solution; second, evaporating this solution (with and without addition of burnt lime) to a certain degree of consistency; and third, the dry distillation of the mass with introduction of steam into the oven.

During each of these operations, we studied as closely as possible to learn what might happen to the cellulose.

As for the first operation, namely, the dissolving of the cellulose, we used bleached soda pulp for the first experiments but later on turned to pure cellulose which we prepared ourselves from carded cotton in the usual way.

When trying to dissolve soda pulp 100 per cent in caustic solution, we found that somewhat severer conditions than prevail during the pulping process had to be applied. With a caustic soda solution of 17 per cent and a pressure of 8 to 10 atmospheres, corresponding to 171-181 deg. C., the solution was perfect after 6 to 7 hours.

Although such high pressures and temperatures are applied now and then in soda pulp manufacturing, the concentration of caustic we employed is about three times that used in practice and, in fact, the statement Tauss[3] made years ago, that the concentration of the caustic is of much greater influence on the solubility of the cellulose than temperature and time, could be confirmed.

The dissolving of the cellulose in caustic soda is, however, more than a simple dissolving process as may be seen from the fact that by neutralizing nothing can be precipitated, the cellulose remaining in solution. That it exists already in a state of decomposition, is evidenced by a measurable, though slight, formation of organic acids and even of carbonic acid.

Lactic Acid Formed

Besides acetic and formic acid, we could isolate and identify lactic acid, which amounts to about one quarter of the total amounts of acids. The formation of lactic acid may be regarded as an interesting fact, for it explains, as will be seen later on, the formation of some of the final products.

This hydroxy acid has later been obtained in larger quantities by Franz Fischer[3] and his collaborators when heating cellulose with caustic soda solution at still higher temperature and at higher pressure than we did.

With purified cellulose instead of soda pulp we obtained the same results except that it took a longer time and somewhat higher temperature to dissolve this material 100 per cent.

As for the formation of lactic acid it is known to be formed in considerable amounts from glucose and other hexoses, treated with strong alkalis.

This would lead to the conclusion that glucose is, in our experiment, the source of lactic acid and that, consequently, cellulose is capable of being hydrolysed by alkali treatment to glucose—a reaction which certainly is worth being studied thoroughly. We have reason to believe that the formation of lactic acid is preceded by that of other hydroxy carboxylic acids of greater molecular weight, such as saccharic acids, being isomeric with glucose In fact, P. Klason has found these acids in the waste liquor of the soda pulp mill.[4]

The second operation on our schedule is the evaporation of the alkaline cellulose solution.

As mentioned before, an addition of burnt lime (CaO) is made to the lye to be evaporated in order to transform the sodium salts of the organic acids into calcium salts.

The patents covering the Rinman process, besides, provide for a further addition of caustic soda to the alkaline waste liquor, chiefly for the reason of having sufficient alkali for the saponification of the lignin's methoxy groups to methyl alcohol during the destructive distillation.

It may be mentioned right now that we have also studied the influence of this addition of alkalis as well as that of varying amounts of them upon the yield on final products.

In order to be able to find out what happens during the process of thickening, we condensed the vapors and investigated the condensate. We found measurable, though very small amounts of acetaldehyde and of methyl alcohol. The former may be regarded as the intermediate product of oxidation to the acetic acid, but it may owe its formation also to more complicated reactions of decomposition of primary products.

It is very probable that the lactic acid is split up into formic acid and acetaldehyde in this way:

$$CH_3.CHOH.COOH = HCOOH + CH_3COH$$

More interesting appears the formation of methyl alcohol since this product is believed to originate from lignin only and not from cellulose.

As cellulose itself does not contain any methoxy groups the methyl alcohol formation must be due to secondary reactions and might perhaps be sufficiently explained by assuming that the calcium salt of the formic acid, which, as mentioned, is another acid contained in the waste liquor, is the source of the methyl alcohol.

It is known[5] and newer investigations have confirmed the previous results[6], that calcium formate, when destructively distilled, usually in the presence of steam, decomposes to methyl alcohol, carbon monoxide and some other products.

Following our schedule, we now turn to the destructive distillation of the thickened waste liquor to which we had added various alkalis and different amounts of them.

As explained before, the thickened mass contains most of the cellulose in a state of decomposition the degree of which is still unknown.

The individual products of an advanced decomposition, though present still in small amounts only, indicate, however, the direction in which the destruction, at least during its first period, tends to go.

These "indicative" substances are acetic, formic and lactic acid, acetaldehyde, methyl alcohol and carbon dioxide.

Of these, only the two latter are to be regarded as final products, whereas we look at the organic acids and the acetaldehyde as intermediate products.

Destructive Distillation

The destructive distillation was carried out in an iron pipe which was heated by electricity. The temperature could be regulated exactly and was measured by means of a pyrometer. Superheated steam entered the retort on the one end, and the products of distillation left it at the other whence they entered a very efficient cooling system, leaving it as an aqueous distillate. Remaining volatile substances were retained by applying freezing mixtures and activated coal, and the uncondensed gases were passed into a gas container.

When trying to divide up the destructive distillation in view of the final products we may distinguish 5 periods, although they naturally overlap each other.

The first period ends at approximately 240 deg. C. During this period, lasting for about 4 hours, the reactions which took place during dissolving of the cellulose and evaporating of the mass, are generally speaking, continued, only at higher velocity, so that more and more of the degraded cellulose decomposes. Besides, primary formed products suffer decomposition or undergo reactions of condensation between equal and different constituents.

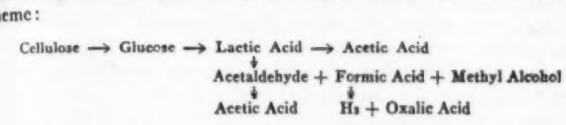
Greater amounts of acetic and lactic acid are formed, the

[3] Tauss, Dinglers Polytechn. Journ., Vol. 273, page 276 (1898).
[3] Fr. Fischer and Schrader, Abhandlungen zur Kenntnis der Kohle, Vol. V, page 350 (1922), and VI, page 115 (1923).
[4] E. Heuser, Lehrbuch der Cellulosechemie, 3rd edition, Berlin, 1927, p. 129.
[5] Lieben and Paterno, Liebig's Ann. 167, 293 (1873).
[6] Fr. Fischer, Tropsch and Schellenberg, Abh. zur Kenntnis der Kohle, 6, 345 (1923).

latter now being easily decomposed to formic acid and acetaldehyde. But only small amounts of the aldehyde can be found by analysis, indicating that it is either destroyed under the influence of the alkali at the high temperature or is oxydized to acetic acid.

The formic acid also undergoes a further decomposition and from the development of hydrogen gas which starts at approximately 150 deg. C., we may conclude that the well known conversion of formic acid into oxalic acid has begun.

This process then becomes the main reaction within the second period of the destructive distillation which lasts for about one hour until the temperature has reached 300 deg. C. It may safely be regarded as a process of alkaline fusion. The whole process up to this point may be explained by the following scheme:



There is, however, one more interesting reaction to be mentioned, namely the formation of ethyl alcohol, which we found in the distillate in amounts up to 2 per cent calculated on the cellulose. There seems to be no doubt that the ethyl alcohol also originates from the lactic acid which, when heated with alkalis, loses its carboxyl group[7]: $CH_3CHOH.COONa + NaOH = CH_3CH_2OH + Na_2CO_3$.

The third period of the dry distillation from 300 to 440 deg. C, lasting about one hour and a half, chiefly yields acetone and must be regarded, from a technical point of view, as the most essential part of the process. The yield on this valuable product chiefly depends on the sort of alkali and the amount of it added to the liquor before its evaporation.

When we first consider the simplest case, that is the distillation of the evaporated mass to which no further alkali had been added, we find the yield on acetone to be comparatively small.

With no lime present in the mass the acetic acid cannot be regarded as a very productive source for acetone, since sodium acetate, by itself, heated at higher temperature, yields considerably less of this substance than the calcium salt does.[8] This is due to the fact that a much greater amount of oils is formed from the sodium salts. Thus, the yield on acetone from the latter amounts to only 45% of that to be obtained from the calcium salt.[9]

Besides sodium acetate, we have, however, sodium lactate, which too has to be regarded as a source for acetone.

It is known that sodium lactate heated by itself with alkalis decomposes to give acetone and mesityl oxide, the latter owing its formation to condensation of two molecules of acetone.[10]

As already explained, lactic acid, on the other hand, yields ethyl alcohol, and Carpenter[11] who studied this reaction assumes that the alcohol is at once oxidized to acetic acid which then loses water and carbon dioxide to give acetone:

$$2CH_3CH_2OH \rightarrow 2CH_3COOH \rightarrow H_2O + CO_2 + CH_3COCH_3$$

But in any case, the yield is limited on account of considerable amounts of oils formed under these conditions.

In accordance with the lower yield on acetone we also find increased production of gases which still consist chiefly of hydrogen.

The amounts of gases are decreased, however, and the yield on acetone is considerably increased when an addition of lime—we applied the amount mentioned in one of Rinman's patents[12]—had been made to the waste liquor.

On the other hand, an addition of sodium hydroxide alone, to that already present in the waste liquor, decreases the yield on acetone very distinctly, namely by 85 per cent compared with the maximum yield obtained from the liquor with addition of lime.

Finally, when both sodium hydroxide and lime are added to the waste liquor, the yield on acetone decreases by 15 per cent compared with addition of lime alone.

The reactions which take place during the third are continued during the fourth period which lasts for about one hour until 500 deg. C. are reached. But in spite of the fact that still more acetone is formed, the amount of oils increases too because it is difficult to remove all acetone formed before considerable parts of it are converted into oils.

These oils represent products of condensation of the acetone, mainly diacetone alcohol, mesityl oxide, phorone and xylitone.

Above a temperature of 500 deg. C. the yields on all products as well as on gas decrease until around 600 deg. C. the process is finished (the fifth period).

It might be interesting to give the total yield figures obtained under optimum conditions, that is where only lime has been added to the waste liquor.

Calculated on bone dry cellulose we found:

Methyl alcohol	0.165 per cent
Ethyl alcohol	2.0 per cent
Ketones	9.6 per cent
Oils	3.8 per cent
Gases	43.0 Vol. per cent

with 80 per cent hydrogen, 2.4 per cent methane and 4.2 per cent carbon dioxide.

The formation of acetone during the different periods of temperature is shown in the following table:

Temperature	Acetone in per cent of the total yield
20—220 deg. C.	0.76 per cent
222—285 deg. C.	1.51 per cent
285—310 deg. C.	1.68 per cent
310—370 deg. C.	7.20 per cent
370—440 deg. C.	35.60 per cent
440—500 deg. C.	42.40 per cent
500—530 deg. C.	10.50 per cent

Summary of Results

In summing up the results of our experiments, we may conclude that the part of the cellulose which during the pulping process is dissolved in the cooking liquor is to be regarded as a source of valuable by-products of which acetone and oils are the most important substances.

These substances owe their formation to a decomposition of the cellulose which already commences with the dissolving in caustic soda and is continued during the thickening of the solution and during the first part of the destructive distillation.

This decomposition apparently proceeds through glucose and saccharic acids to lactic, acetic and formic acid.

During the further periods of the destructive distillation, the latter three acids, then, are subject to secondary and tertiary reactions which result in the final products as acetone, higher ketones, ethyl and methyl alcohol, as well as hydrogen, methane and carbon dioxide.

Our experiments have been confined to cellulose only, and several circumstances prevented me from continuing with them on the other main constituents of the waste liquor, namely the non-cellulose carbohydrates and the lignin.

In the meantime, however, research on the Rinman process has been taken up at the Stockholm Technical University by D. Johansson, and the results have been published by the Swedish Academy of Science.[13]

As far as cellulose is concerned our results are confirmed by Johansson and with regard to the lignin he finds that the main final products are methyl alcohol and oils, the latter consisting of phenols, alcohols, esters and hydro carbons.

The carbohydrates—pentosans and hexosans—have not yet been investigated, but it may be assumed that they will yield at least part of the same products obtained from cellulose.

[7] L. Carpenter: Chemical News, Vol. 109, 5 (1914).
[8] Hägglund: Journ. fuer praktische Chemie, Vol. 107, p. 50.
[9] W. Kroenig: Zeitschrift fuer angewandte Chemie, 37, p. 667 (1924).
[10] Hans Meyer: Analyse und Konstitution organ. Verbindungen, 1916, p. 630.
[11] Carpenter: loc. cit.
[12] D. R. P. 270,929 Kl. 12 o Gr. 10 (1911).
[13] D. Johansson: Ingenioers-Vetenskaps-Akademiens Handlingar, Stockholm, No. 61 (1927).

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

By Clarence J. West, Chairman

Sizing

Rosin Sizing of Paper. II. Experimental S. R. Olsen and Ross Aiken Gortner, U. of Minnesota, St. Paul, Minn. PAPER TR. J. 87, No. 16, 47-50 (Oct. 18, 1928). The curve obtained when the amount of rosin absorbed by cellulose fibers is plotted against the time of contact between the stock and the rosin resembles the adsorption is other of known colloidal reactions, and is considered to be a colloidal phenomenon and not a classical chemical reaction between the rosin, alum and fibers. The amount of residual ash in the pulp influences the optimum hydrogen ion concentration as well as the amount of rosin adsorbed. Under the conditions of the experiments, the optimum hydrogen ion concentration for maximum adsorption of rosin was from pH 4.5 to 6.5 for commercial pulp and from pH 4.0 to 4.5 for the purified pulp. Under commercial conditions, the optimum hydrogen ion concentration for the best sizing is probably from about pH 4.5, to 6.5, depending on the type of pulp used. The results of the experiments indicate that no universal optimum hydrogen ion concentration for the rosin sizing of paper can be used, but rather that this optimum hydrogen ion concentration varies with such factors as the kind and quality of pulp and its degree of washing, the kind and amount of filler used, the amount and hardness of water used as well as the quality of paper being manfactured. It is therefore recommended that each mill work out its own standards for the sizing of paper, basing their experimental work on the fundamental principals of the process. It was found that a neutral ether extraction does not give a true value for the amount of rosin adsorbed.—A. P.-C.

Sizing Process. A. Lutz assignor to Ronald C. Lee. U. S. pat. 1,682,390, Aug. 28, 1928.—Fibrous material such as paper or cardboard is impregnated with a gelatinous sizing composition and then treated with a hardening agent comprising methylolformamide, and allowed to stand to effect progressive hardening.—A. P.-C.

Sizing Cellulosic Materials. L. Bradshaw. U. S. pat. 1,672,705, June 5, 1928—A sizing suitable for use on paper is prepared with peanut meal and casein.—A. P.-C.

Sizing Fibers. H. L. Becher assignor to The Agasote Millboard Company. Can. pat. 275,625, November 22, 1927; U. S. pat. 1,678,720, July 31, 1928.—Water, tannic acid and a soluble metallic soap are added to the fiber, the fiber is beaten and then the soap is precipitated on to the fiber by means of a metallic salt.—A. P.-C.

Pulp and Paper Testing

Copper and Silver Numbers as Factors for the Valuation of Cellulose Products. J. Rinse, International Paper Company. IND. ENG. CHEM. 20, 1228-1230 (Nov. 1928).—The determination of copper values is reviewed and some changes in the methods are advised to improve the accuracy and to diminish the time required for the analysis. The method of Braidy is preferred to the Fehling's solution procedure. In both methods the analytical part of the determination requires a long time and complicated apparatus. Moreover, the copper values may differ largely from the true reducing figures, as the cellulose itself is attacked by the caustic solution and the time of boiling is too short for complete oxidation of the original impurities. Gotze's method for determining silver numbers is reviewed and applied to bleached sulphite pulp. A suitable apparatus and some changes are advised. The results show that after 24 hours the reaction is nearly completed and that the values will be much nearer to the true value than the copper numbers. Moreover, the manipulations of the analysis are much simpler, standardization is less necessary, and the results are more accurate.—A. P.-C.

Note on the Estimation of Starches. W. H. Boast. The Gardner & Harvey Company. THE CHEMIST-ANALYST 17, No 3, 15 (1928); Pulp & Paper 26, 1388 (Oct. 4, 1928). To determine starch in bond papers and in patent white fiber boards, the usual practice is to follow the official TAPPI method. Difficulty was encountered in the final titration with Fehling or Benedic reagents. The following procedure, although somewhat longer, has been found more satisfactory: Extract, hydrolyze and neutralize as in the official method. Transfer 2 cc. of the hydrolyzed starch solution to a Folin sugar tube. To a similar tube add 2 cc. of standard sugar solution containing 0.2 mg. of dextrose. To each tube add 2 cc. of alkaline copper-tartrate solution. Place both tubes in boiling water and keep them there for six minutes. Cool with cold water and add 2 cc. of alkaline phosphate molybdate solution. After the cuprous oxide has dissolved, dilute to the 25 cc. mark, mix and compare the color of the unknown solution with the standard in the colorimeter set at 20 cc. Calculate the dextrose found in terms of starch.—A. P.-C.

Chemistry of the Cellulose Determination. Clifford E. Peterson and Mark W. Bray. U. S. Forest Prod. Lab. Madison, Wis. Ind. Eng. Chem. 20, 1210-1213 (Nov. 1928).—A study of the chemistry of the Cross and Bevan cellulose determination method has shown that for spruce wood the reaction involved follows the same general course taken by the reaction occurring with the ordinary pulping reagents but that both higher yields and greater delignification result. The experiments show that, for spruce wood, lower yields of cellulose are obtained from the oven-dried residues than from the original wood, that lignin is not completely removed, even after a number of protracted chlorinations, and that some of the pentosans in the cellulose are removed during the first and each succeeding chlorination, while the pentosans not in the cellulose are destroyed very rapidly during the process of cellulose isolation. The fact that the pentosans in the cellulose do not increase in the various steps of the chlorination process indicates that furfural-yielding bodies are not formed by decomposition of cellulose during chlorination. To secure maximum reactivity, the sample of spruce to be chlorinated should contain a quantity of water at least equal to its own weight, evenly distributed throughout the wood. Presumably, the yield of chlorinated residue may be controlled by the amount of moisture in the sample.—A. P.-C.

Paper Specialties

Newsprint Paper. W. Millspaugh assignor to the Paper & Textile Machy. Co. U. S. pat. 1,674,980, June 26, 1928. News print paper of ordinary stock and thickness but of greater strength than ordinary news print is made by simultaneously forming wet sheets of half the thickness of the ordinary wet sheet and consolidating them as a single sheet, thereby obtaining the strengthening effect of a laminated formation.—A. P.-C.

Writing and Printing Papers. Jean Vigreux, Papeteries de la Hayleodecartes. Papier 31, 643-648 (June 1928). A brief discussion of the composition and uses of the various grades.—A. P.-C.

Cardboards. Saintours-Payerne. Papier 31, 623-630 (June 1928). A brief review of the manufacture, properties and uses of the different grades of boards.—A. P.-C.

Composite Board. J. D. Carter. U. S. pat. 1,676,727, July 10, 1928. Water resistant plies such as cardboard or veneer are united by reaction products of alkaline sodium silicate solution and calcium carbonate.—A. P.-C.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Chillicothe, Ohio—The Mead Pulp and Paper Company has awarded a general contract to the Westerman Construction Company, 247 East Broad street, Columbus, Ohio, for the erection of a new addition to mill, to be two and three-story, reported to cost in excess of $150,000, with equipment. Work will be placed under way at once. The new unit will be used for increased capacity and it is understood will be supplemented by other additions at an early date, enlarging three or four of the present mill buildings.

Philadelphia, Pa.—The Albrecht-Bechtold Company, Hagert and Emerald streets, manufacturer of paper boxes and containers, has leased space in the building of the Dorman Carpet Mills, Howard and Oxford streets, totaling about 20,000 square feet of floor area, and will occupy for expansion in output. It is understood that possession will be taken at once.

Mittineague, Mass.—The Strathmore Paper Company has awarded a general contract to Fred T. Ley & Co., 1215 Main street, Springfield, Mass., for the construction of new addition, to be used as a steam turbine building. It will be two-story, 25x50 feet, and is reported to cost more than $75,000 with machinery. Work is scheduled to begin immediately.

Pensacola, Fla.—The Armstrong-Newport Company, West Main street, has approved plans for construction of first unit of proposed new local plant for the manufacture of insulation board products and will proceed with work at once. General contract has been awarded to the Worden-Allen Company, Milwaukee, Wis. The main building will be one-story, 75x975 feet, and is reported to cost more than $750,000, with equipment; it will be of steel and concrete type, and contract for latter work has been awarded to the C. H. Turner Construction Company, Brent Building, Pensacola. Production of insulating board will be carried out under a special process, using shredded wood in pulp-like form for raw material, such to be pulverized and rolled into the finished product. A large tract of timber land in the vicinity of Pensacola has been secured for raw material supply. This company is an affiliation of interests between the Newport Company, South Milwaukee, Wis., manufacturer of naval stores, industrial chemicals, etc., and the Armstrong Cork Company, Twenty-fourth street, Pittsburgh, Pa., and is controlled jointly by the two organizations. A. A. Schlesinger is president.

Eau Claire, Wis.—The Dells Paper & Pulp Company has closed an agreement with the Northern States Power Company of Wisconsin, Eau Claire, for the sale of its hydroelectric power plant, the transfer to be made on May 1, 1930. In accordance with contract, the Dells company will remove three pulp grinders from existing waterwheels at the station, and will arrange to drive these units with large synchronous motors in the future. It is understood that other electrification work at the mill will be carried out at the same time. The power company will develop the acquired plant as a central station for this district, and will make extensions and improvements in the unit, including the installation of three waterwheel generators, transformer station and transmission line for connection with present system. This work is estimated to cost close to $500,000. The paper company will secure its power requirements from the Northern States plant and system.

Chicago, Ill.—The Continental-Diamond Fibre Company, 919 North Michigan avenue, Chicago, will proceed with the erection of proposed new local plant for the manufacture of fiber products, including sheets, rods, tubes, etc. It will be one-story, 36x50 feet, and is reported to cost about $35,000 with equipment. This company is a merger of the Continental Fibre Company, Newark, Del., and the Diamond Fibre Company, Bridgeport, Pa.

Camden, Ark.—The George & Sherrard Paper Company, Wellsburg, W. Va., a subsidiary of the International Paper Company, New York, has arranged for the establishment of a branch mill at Cullendale, Camden, for the manufacture of paper bags and containers for cement and other materials. The plant will be in the vicinity of the mill of the parent company at this location. Machinery and equipment will be installed at once, and it is proposed to begin production early in 1930, giving employment to about 75 operatives. T. A. McCord will be in charge at the plant.

Baltimore, Md.—Thomas H. O'Connor & Co., 455 Guilford avenue, paper stock, are said to be planning the rebuilding of four-story building, destroyed by fire, December 16, with loss reported in excess of $150,000, a considerable portion representing contents.

Chicago, Ill.—The Paper Tube Company has leased a floor in the building at 1714-20 Damen avenue, and will establish a plant at that location for the manufacture of paper tubes and containers. Equipment will be installed at once.

Rumford, Me.—The Continental Paper and Bag Corporation, a subsidiary of the International Paper Company, New York, has resumed the production of news print at its local mill, and three machines have been started up for this service, with working force on a three-shift basis. The manufacture of news print was discontinued at this plant about five years ago.

Housatonic, Mass.—The Rising Paper Company, a subsidiary of the Strathmore Paper Company, Mittineague, Mass., is said to have decided to defer the erection of its proposed new unit, previously referred to in these columns, and will likely proceed with the work early in the spring. Bids were recently asked on general contract for the structure, to be three-story, 75x180 feet, estimated to cost approximately $100,000, with equipment. L. Howes is company architect in charge.

Franklin, N. H.—The International Paper Company was forced to curtail operations at its local paper mill on December 16, owing to low water in the Winnepesaukee River, upon which the plant is dependent for power. The situation is due to the prolonged drought which has prevailed for a number of months in this part of New Hampshire. It is proposed to resume production as soon as water supply is available.

Minneapolis, Minn.—The Backus-Brooks Company, Builders Exchange Building, is projecting plans for the establishment of a new mill on site to be selected in Finland, to be devoted to the production of insulating board as manufactured at the insulate

plant of the Minnesota & Ontario Paper Company, International Falls, Minn., a subsidiary organization. The proposed mill will be of large proportions and as now projected, will consist of several units, with power house and other buildings, reported to cost more than $500,000 with machinery. The company is also said to be planning similar plants in Scandinavian countries of Europe, where heavy export trade has been carried on in the past.

Glens Falls, N. Y.—The International Paper Company, New York, is arranging for the early resumption of operations at its local mill for the manufacture of news print, and it is expected to begin production early in 1930. A full working force will be employed. The mill has been inactive for about two years past.

Toronto, Ont.—The Canadian Paperboard Company, 32 Front street, has completed plans for the construction of a new addition to its plant, and will proceed with superstructure at once. It is estimated to cost about $65,000, with equipment, and will provide for considerable increase in present capacity.

New Companies, Etc.

Peapack, N. J.—The Peapack Paper Company, Inc., has been chartered with a capital of $100,000, to manufacture paper products, and proposes to operate a mill in this vicinity. The incorporators are Louis A. Zwiller, Peapack; Walter C. Atkinson, Pawtucket, R. I. The company is represented by Reger & Smith, Somerville, N. J., attorneys.

Philadelphia, Pa.—The Old Dominion Fibre Company has been incorporated with a capital of $5,000, to manufacture fiber products of various kinds. D. H. H. Felix, 5441 Wayne avenue, Philadelphia, is treasurer and representative.

Brooklyn, N. Y.—The Schlein Fancy Box Company has been organized with a capital of $10,000, to manufacture paper boxes and containers. The company is represented by H. G. Rediker, 26 Court street, Brooklyn.

Chicago, Ill.—The Central West Paper Bag Company, 5967 West 65th street, has filed notice of company dissolution under state laws.

Aurora, Ill.—The Insulating Products Company has filed notice of increase and change in capital stock from $100,000 to $75,000 and 20,000 shares of common stock, no par value, for expansion.

Indianapolis Demand Is Quiet

INDIANAPOLIS, Ind., December 23, 1929.—Most of the mills and paper houses will be able to report a slight increase over the year before. The rate of increase varies, however, and in most instances is slight, but it is there. The local wholesale houses will close the year with low inventories that likely will be kept low until the spring season opens at least.

At the present time there is a big lull in business. Demand for news print is active, of course, or has been during the last week to the smaller papers, due to holiday advertising, but demand for all other grades has sunk to a low ebb. Demand for the better grades of paper, including book paper is expected to improve slightly after the first of the year, but there is no gainsaying the fact that something is amiss with general business here and the paper trade is suffering accordingly. The last two weeks has seen a good demand for wrapping paper, due to seasonal influences and some advance inquiries now are being received for building papers against the coming of spring.

The Horse of the Desert

William Robinson Brown, director and assistant treasurer of the Brown Company, of Berlin, New Hampshire, is the author of an authoritative book on the Arabian horse, entitled "The Horse of the Desert."

This valuable work, which has just been published by the Derrydale Press, of 127 East 34th street, New York, contains a foreword by Major General James G. Harbord and Professor Henry Fairfield Osborn.

News of the Boston Paper Trade

BOSTON, Mass., December 23, 1929.—A luncheon meeting of the Wrapping Paper Division of the New England Paper Merchants' Association at the Chamber of Commerce Building December 17 took the form of a Christmas party, each one receiving a favor at his plate. Floyd H. Blackman, vice president of the association, presided. Eighteen were present.

At a sales meeting of John Carter & Co., Inc., held December 21, a letter from Harrie E. Waite, merchandising director, was read, in which he expressed his thanks for a vote of appreciation which was sent to him the previous week. Mr. Waite, who has been ill several weeks, is doing well. Max Frank, buyer, who has been away from the office a year on account of illness, telephoned his appreciation of a message from the company. Mr. Frank is holding his own.

Heads of departments of John Carter & Co., Inc., held a sales meeting December 21, with the former salesmen of Stone & Andrew, Inc., present.

Carter, Rice & Co. Corp. are to send out to the trade a souvenir as a New Year's Greeting in the form of a sliding paper scale for determining weights of 500 in odd-sized sheets. The scale is used for weighing writings, bonds, book papers, news and cover papers.

With the scale is an adaptation of one of the cuts which is a stock design of the Old Colony Envelope Company.

The Tileston & Hollingsworth Company has installed a telephone-typewritter between the office of the company on Congress street and the mill in Hyde Park.

In connection with a campaign for papers of old fashioned quality, the Tileston & Hollingsworth Company is sending out broadsides printed on Blue Crinoline Text Wove Antique.

Chas. T. Dole, vice-president and manager of sales of the Champion-International Company, Lawrence, Mass., called on the trade here last week.

John Boyle, veteran salesman for Storrs & Bement Company, who has been with the firm since 1862, is seriously ill.

Better Demand for Finnish Sulphite

WASHINGTON, D. C., December 24, 1929.—In the Finnish market strong and easy bleaching sulphite have been in better demand than bleached sulphite, which has shown some weakness according to a report to the Department of Commerce.

In the sulphate division, the kraft market continues dull, although there is a fair demand for easy bleaching sulphate. With the exception of the news print market, where sales for 1931 delivery are going forward, conditions are generally stais-factory. The market for both thin printings and kraft wrappings is dull, while keen competition continues to characterize the fine paper market. The market for greaseproof is somewhat better, new orders being entered from time to time. During the first ten months of the current year shipments by the Finnish Paper Mills' Association, the Finnish Paper Bureau and the Kymmene Aktibolaget reached a total of 199,057 metric tons as against 199,783 tons during the corresponding period of last year.

VM-Type Combustion Engineering Boiler

The Combustion Engineering Company has just issued an attractive folder which illustrates and describes the VM-Type Combustion Engineering boiler, which is designed especially for limited space conditions, particularly where headroom is low.

This is a bent tube boiler, simple in design, substantial in structure and efficient in performance.

The folder containing a table of dimensions, as well as drawings which show the setting dimensions required for the various sizes in which the VM-Type boiler is built.

Additional copies are available and will be furnished upon request to the company at 200 Madison avenue, New York.

Idle machines earn few dollars

THE finest equipment in the world is no better than the most obsolete if it has to stand idle while you lay a new floor. And in many mills this has been happening every few years.

Wood, as practically every engineer will agree, is a most desirable flooring material were it not for its short life. It is less slippery, less dusty, less noisy and less tiring; it is unaffected by extremes of temperature and permits the moving of machines. But how often perfectly good top flooring must come out because the subflooring underneath is rotting away. By treating subflooring and sleepers properly against fungus decay this lone but serious objection is overcome.

Awlco-ized subflooring and sleepers, impregnated under vacuum and pressure with rot-resisting salts, will last as long as your building. Once you have put them in, you are set. *That* maintenance problem is settled for all time.

And when overhead is such an important factor in figuring production costs and prices, to keep your machines running full time is certainly worth while even if, by some strange chance, you are not concerned with the cost of floor replacement.

PROCESSED LUMBER CO.

formerly American
Wolmanized Lumber Co.
ELIZABETH, N. J.

SCHOPPER-RIEGLER

STANDARD

BEATING and FREENESS TESTER

The ORIGINAL and most valuable of all testers for judging the freeness of pulps and beating degree scientifically.

WILL TEST ALL STOCKS

ASSURES UNIFORM RUNS OF PULP AND PAPER

EVERY MILL NEEDS ONE

descriptive booklet will be mailed on request.

The Complete SCHOPPER Line Includes:

MICROMETERS	FOLDING TESTER
ALL KINDS OF SCALES	DENSOMETER
CONDITIONING OVENS	ASH TESTER

AND MANY OTHER ITEMS

FOREIGN PAPER MILLS, INC.

72 Duane Street New York, N. Y.

Sole Agents

UNITED STATES CANADA

Imports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING DECEMBER 21, 1929

SUMMARY

Cigarette paper .....757 cs.
all paper .....25 bls., 59 cs.
Paper hangings .....79 bls., 14 cs.
News print .....1,604 rolls
Printing paper .....202 cs.
Wrapping paper .....10 bls., 105 cs.
Packing paper .....5 bls.
Filter paper .....25 cs.
Colored paper .....200 cs.
Decalcomania paper .....29 cs.
Drawing paper .....46 cs.
Condenser tissue paper .....9 cs.
Tissue paper .....79 cs.
Surface coated paper .....41 cs.
Baryta coated paper .....40 cs.
Metal paper .....9 cs.
Writing paper .....5 cs.
Photo paper .....4 cs.
Miscellaneous paper .....80 bls., 49 cs.

CIGARETTE PAPER

American Tobacco Co., La Bourdonnais, Bordeaux, 400 cs.
P. J. Schweitzer, Pres. Harrison, Marseilles, 135 cs.
De Manduit Paper Corp., Vincent, Havre, 222 cs.

WALL PAPER

F. J. Emmerich, Resolute, Hamburg, 4 bls., 2 cs.
R. F. Downing & Co., Resolute, Hamburg, 4 bls.
Bendix Paper Co., Resolute, Hamburg, 12 cs.
Phoenix Shipping Co., Resolute, Hamburg, 2 cs.
A. L. Diament & Co., Olympic, Southampton, 3 cs.
F. J. Emmerich, Minnewaska, London, 6 bls.
F. A. Binder, Dresden, Bremen, 9 bls.
Universal Car Loading Co., Dresden, Bremen, 3 bls., 3 cs.
F. J. Emmerich, Albertic, Liverpool, 12 rolls, 33 bls., 3 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Carinthia, Liverpool, 4 bls.
A. C. Dodman, Jr., Inc., Carinthia, Liverpool, 55 bls.
Whiting & Patterson Co., Inc., Olympic, Southampton, 7 cs.
W. H. S. Lloyd & Co., Minnewaska, London, 20 bls., 7 cs.

NEWS PRINT

H. Reeve Angel & Co., Inc., Kolsnaren, Helsingfors, 289 rolls.
Journal of Commerce, Kolsnaren, Helsingfors, 75 rolls.
Perkins Goodwin & Co., Friesland, Hamburg, 543 rolls.
Stora Kopperberg Corp., Kungsholm, Gothenburg, 62 rolls.
Parsons & Whittemore, Inc., Dresden, Bremen, 596 rolls.
Perkins Goodwin & Co., Dresden, Bremen, 39 rolls.

PRINTING PAPER

Keuffel & Esser Co., Resolute, Hamburg, 43 cs.
E. Dietzgen & Co., Resolute, Hamburg, 28 cs.
E. Dietzgen & Co., Statendam, Rotterdam, 37 cs.
Borden Riley Paper Co., Statendam, Rotterdam, 52 cs.
Burroughs Wellcome & Co., American Shipper, London, 18 cs.
Japan Paper Co., C. Grande, Genoa, 11 cs.
J. J. Shore & Co., Dresden, Bremen, 13 cs.

WRAPPING PAPER

Irving Trust Co., Resolute, Hamburg, 5 bls.
J. P. Heffernan Paper Co., Resolute, Hamburg, 5 bls.
Atlantic Forwarding Co., Resolute, Hamburg, 7 cs.
National Consumers Paper Co., Belgenland, Antwerp, 9 cs.
Steffens Jones Co., Belgenland, Antwerp, 8 cs.
Sylvania Industrial Corp., Belgenland, Antwerp, 20 cs.
Standard Products Corp., Olympic, Southampton, 61 cs.

PACKING PAPER

National Consumers Paper Co., Statendam, Rotterdam, 5 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., Minnewaska, London, 25 cs.

COLORED PAPER

E. Dietzgen & Co., Resolute, Hamburg, 131 cs.
——, Dresden, Bremen, 47 cs.
S. Gilbert, Dresden, Bremen, 22 cs.

DECALCOMANIA PAPER

C. W. Sellers, Resolute, Hamburg, 22 cs.
L. A. Consmiller, Resolute, Hamburg, 5 cs.
Phoenix Shipping Co., Resolute, Hamburg, 2 cs.

DRAWING PAPER

Keuffel & Esser Co., Resolute, Hamburg, 42 cs.
H. Reeve Angel & Co., Inc., Minnewaska, London, 4 cs.

CONDENSER TISSUE PAPER

F. C. Strype, C. Grande, Genoa, 9 cs.

TISSUE PAPER

F. C. Strype, Kolsnaren, Helsingfors, 32 cs.
Old Master Paper & Pulp Co., Resolute, Hamburg, 44 cs.
G. W. Sheldon & Co., Minnewaska, London, 3 cs...

SURFACE COATED PAPER

Globe Shipping Co., Resolute, Hamburg, 2 cs.
Phoenix Shipping Co., Resolute, Hamburg, 2 cs.
Gevaert Co. of America, Belgenland, Antwerp, 37 cs.

BARYTA COATED PAPER

Globe Shipping Co., Dresden, Bremen, 40 cs.

METAL PAPER

Hensel, Bruckman & Lorbacher, Dresden, Bremen, 9 cs.

PHOTO PAPER

J. H. Schroeder Banking Corp., Dresden, Bremen, 4 cs.

WRITING PAPER

Japan Paper Co., Statendam, Rotterdam, 4 cs.
H. Reeve Angel & Co., Inc., Minnewaska, London, 1 cs.

MISCELLANEOUS PAPER

American Express Co., Resolute, Hamburg, 2 cs.
Van Oppen & Co., Pres. Harrison, Genoa, 20 cs.
Kraemer & Co., Kungsholm, Gothenburg, 108 bls.
Green Low & Dolge, Inc., Kungsholm, Gothenburg, 3 bls.
Japan Paper Co., Kungsholm, Gothenburg, 3 cs.
E. H. Sargent & Co., Kungsholm, Gothenburg, 8 cs.
Tamm & Co., Olympic, Southampton, 1 cs.
Heemsoth Basse & Co., Statendam, Rotterdam, 60 bls.
W. Bersch, Dresden, Bremen, 15 cs.

RAGS, BAGGINGS, ETC.

Manufacturers Trust Co., Hellig Olav, Copenhagen, 52 bls. rags.
Chase National Bank, Alesia, Alexandria, 163 bls. rags.
Irving Trust Co., Alesia, Alexandria, 80 bls. rags.
New York Trust Co., Alesia, Alexandria, 125 bls. rags.
Irving Trust Co., Cold Harbor, Manchester, 52 bls. bagging.
E. Butterworth & Co., Inc., Cold Harbor, Manchester, 36 bls. rags.
E. Mayer, Cold Harbor, Manchester, 68 bls. bagging.
New York Trust Co., Friesland, Hamburg, 18 bls. rags.
Castle & Overton, Inc., Examelia, Alexandria, 95 bls. rags.
Darmstadt, Scott & Courtney, Examelia, Alexandria, 160 bls. rags.
J. Cohen & Son, Carinthia, Liverpool, 34 bls. rags.
P. Garvan, Sud Uruguayo, Havana, 68 bls. rags.
Jaffe Products Corp., Sud Uruguayo, Havana, 18 bls. rags.
Brown Bros. & Co., Letitia, Glasgow, 53 bls. paper stock.
C. R. Spence, Letitia, Glasgow, 51 bls. paper stock.
Darmstadt, Scott & Courtney, Nordvard, Genoa, 44 bls. bagging.
R. Canovai Figli, Nordvard, Leghorn, 228 bls. rags.
Banco Com'l Italiane Trust Co., Nordvard, Leghorn, 374 bls. rags.
E. Butterworth & Co., Inc., Nordvard, Naples, 45 bls. rags.
Banco Com'l Italiane Trust Co., Nordvard, Palermo, 75 bls. rags.
Darmstadt, Scott & Courtney, Nordvard, Malaga, 64 bls. rags.
Equitable Trust Co., Sac City, Antwerp, 11 bls. rags.
Equitable Trust Co., Exford, Odessa, 55 bls. new cuttings.
Equitable Trust Co., Exford, Odessa, 236 bls. cloth.
Equitable Trust Co., Exford, Odessa, 16 bls. rags.
Equitable Trust Co., Exford, Odessa, 26 bls. flax cuttings.
Irving Trust Co., Dresden, Bremen, 37 bls. rags.
Chemical Bank & Trust Co., Dresden, Bremen, 35 bls. thread waste.
E. Mayer, Dresden, Bremen, 3 bls. rags.
E. J. Keller Co., Inc., Stuttgart, ——, 40 bls. rags.

OLD ROPE

Brown Bros. & Co., Hellig Olav, Copenhagen, 108 bls.
Brown Bros. & Co., Vego, Bristol, 312 coils.
W. Steck & Co., Cold Harbor, Manchester, 69 coils.
Brown Bros. & Co., Belgenland, Antwerp, 76 coils.
Brown Bros. & Co., Exton, Genoa, 118 coils.
Brown Bros. & Co., Jean Jadot, Antwerp, 55 coils.
Brown Bros. & Co., Vincent, Havre, 122 coils.
Brown Bros. & Co., Alfonso XIII, Coruna, 138 rolls.
Equitable Trust Co., Exton, Odessa, 125 coils.

CASEIN

National City Bank, Sud Uruguayo, Buenos Ayres, 1016 bags, 49,171 ks.
Crawford Keen Co., Sud Uruguayo, Buenos Ayres, 417 bags, 25,020 ks
Crawford Keen Co., Pan America, Buenos Ayres, 417 bags.
Trust Co. of North America, Pan America, Buenos Ayres, 916 bags.
Kalbfleisch Corp., Pan America, Buenos Ayres, 1,252 bags.

WOOD PULP WADDING

Bendix Paper Co., Statendam, Rotterdam, 50 bls.

WOOD PULP

Lagerloef Trading Co., Kolsnaren, Helsingfors, 650 bls. sulphate.
Lagerloef Trading Co., Kolsnaren, Helsingfors, 1,440 bls. sulphite.
Lagerloef Trading Co., Kolsnaren, Helsingfors, 313 rolls, 53 bls. pulp boards.
Atterbury Bros., Inc., Hellig Olav, Oslo, 1,512 bls. wood pulp, 302 tons.
E. M. Sergeant & Co., Hellig Olav, Oslo, 600 bls. wood pulp, 101 tons.
Johanson, Wales & Sparre, Inc., Hellig Olav, Oslo, 890 bls. dry soda pulp, 178 tons.
Castle & Overton, Inc., Friesland, Hamburg, 650 bls. wood pulp, 97 tons.
Chemical Bank & Trust Co., Friesland, Hamburg, 254 bls. sulphite, 51 tons.
Bulkley, Dunton & Co., Kungsholm, ——, 600 bls. sulphate.
Johanson, Wales & Sparre, Inc., Kungsholm, Gothenburg, 1,000 bls. sulphate.
Johanson, Wales & Sparre, Inc., Kungsholm, Gothenburg, 155 bls. wood pulp.
Johanson, Wales & Sparre, Inc., Kungsholm, Gothenburg, 299 bls. dry soda pulp.
Perkins, Goodwin & Co., Kungsholm, Gothenburg, 127 bls. sulphite.
Parsons & Whittemore, Inc., Kungsholm, Gothenburg, 120 bls. sulphate.
E. M. Sergeant & Co., Kungsholm, Gothenburg, 200 bls. sulphite.
Price & Pierce, Ltd., Kungsholm, Gothenburg, 375 bls. wood pulp.
Castle & Overton, Inc., Statendam, Rotterdam, 340 bls. wood pulp.

WOOD FLOUR

The Burnet Co., Kungsholm, Gothenburg, 314 bags.
Innes, Speiden & Co., Kungsholm, Gothenburg, 726 bags.
B. L. Soberski, Statendam, Rotterdam, 2,000 bags.

PHILADELPHIA IMPORTS

WEEK ENDING DECEMBER 21, 1929

National City Bank, Executive, Piraeus, 55 bls. rags.
Neidich Process Co., Kolsnaren, Helsingfors, 74 cs. tissue paper.
Lagerloef Trading Co., Kolsnaren, Helsingfors, 320 bls. sulphite.
Lagerloef Trading Co., Kolsnaren, Viborg, 14,476 bls. sulphite.
Lagerloef Trading Co., Kolsnaren, Viborg, 158 bls. sulphate.
Lagerloef Trading Co., Kolsnaren, Viborg, 168 bls. boards.
Castle & Overton, Inc., Vego, Bristol, 108 bls. rags.
J. A. Steer & Co., Vego, Bristol, 187 bls. waste paper.
J. A. Steer & Co., Vego, Bristol, 141 coils old rope.
Congoleum Nairn Co., Exton, Leghorn, 113 bls. rags.
Guaranty Trust Co., Exton, Leghorn, 585 bls. rags.

(Continued on page 76)

Sulphur

A FIRST REQUISITE

in

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

TEXAS GULF SULPHUR CO
(Incorporated)
75 East 45th Street, New York City
Mine: Gulf, Matagorda County, Texas

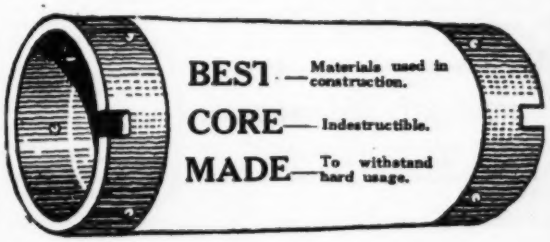
SHIPPING INSURANCE

The Use of

ELIXMAN CORES

protects your rolls and insures their delivery to your customer in perfect condition. They eliminate claims for damages.

SHIPPING INSURANCE



Your two sources of supply are

Canadian Elixman Company
HAMILTON, ONTARIO

Elixman Paper Core Company
CORINTH, N. Y.

WOODPULP AGENTS

PRICE & PIERCE, Ltd.,

17 EAST 42ND ST.
NEW YORK

West Virginia Pulp and Paper Company

Manufacturers of

SUPERCALENDERED
and
MACHINE FINISHED BOOK
and LITHOGRAPHIC
PAPERS

Offset, Envelope, Bond, Writing, Cover and Music Paper, High Grade Coated Book, Index Bristol, Post Card, Kraft and Label Papers.

also

Bleached Spruce Sulphite and Soda, Kraft Pulp

230 Park Ave. New York
35 East Wacker Drive Chicago
503 Market St., San Francisco, Cal.
Sixth and Chestnut Sts., Philadelphia, Pa.

Imports of Paper and Paper Stock

(*Continued from page 74*)

A. H. Searle, Inc., Sac City, Antwerp, 65 bls. rags.
Castle & Overton, Inc., Sac City, Antwerp, 706 bls. rags.
Brown Bros. & Co., Sac City, Antwerp, 26 bls. cotton waste.
Phila. National Bank, Sac City, Antwerp, 443 bls. rags.
J. A. Steer & Co., Sac City, Antwerp, 36 bls. rags.
S. E. Ingber, Sac City, Antwerp, 66 bls. rags.
E. Butterworth & Co., Inc., Sac City, Antwerp, 150 bls. bagging.
E. Mayer, Sac City, Antwerp, 31 bls. rags.
Union Waste Co., Sac City, Antwerp, 30 bls. rags.
Katzenstein & Keene, Inc., Sac City, Antwerp, 140 bls. rags.
Bulkley, Dunton & Co., Krefeld, ——, 2,000 bls. wood pulp.
Bulkley, Dunton & Co., Fernlane, ——, 1,550 bls. wood pulp.
E. J. Keller Co., Inc., Crefeld, ——, 115 bls. rags.
E. J. Keller Co., Inc., Schodack, ——, 48 bls. rags.

NEW ORLEANS IMPORTS

WEEK ENDING DECEMBER 21, 1929

Bulkley, Dunton & Co., Minden, ——, 300 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING DECEMBER 21, 1929

Bulkley, Dunton & Co., Natirar, ——, 3,000 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING DECEMBER 21, 1929

National City Bank, Executive, Piraeus, 340 bls. rags.
Union Rag & Paper Exchange, Vincent, Dunkirk, 43 bls. rags.
S. Schapiro & Son, Vincent, Dunkirk, 100 bls. rags.
Congoleum Nairn Co., Vincent, Dunkirk, 188 bls. rags.
Castle & Overton, Inc., Vincent, Dunkirk, 170 bls. rags.
Bulkley, Dunton & Co., City of Alton, ——, 125 bls. wood pulp.
Bulkley, Dunton & Co., Georgia, ——, 2,375 bls. wood pulp.
Bulkley, Dunton & Co., Binnendyk, ——, 600 bls. wood pulp.
Bulkley, Dunton & Co., Braheholm, ——, 900 bls. wood pulp.
Bulkley, Dunton & Co., Tuebingen, ——, 375 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING DECEMBER 21, 1929

Atkinson Haserick Co., Pres. Harrison, Genoa, 11 cs. paper.
E. Butterworth & Co., Inc., Examelia, Alexandria, 66 bls. rags.
R. Bishop Manfg. Co., Sac City, Antwerp, 96 bls. rags.
Intl. Germanic Trust Co., Sac City, Antwerp, 92 bls. bagging.
V. Galaup, Sac City, Antwerp, 66 bls. bagging.
Forte Dupee Sawyer Co., Sac City, Antwerp, 45 bls. rags.
G. M. Graves Co., Sac City, Antwerp, 41 bls. rags.
Bulkley, Dunton & Co., Ferndale, ——, 15,325 bls. wood pulp.
Bulkley, Dunton & Co., Natirar, ——, 250 bls. wood pulp.
Bulkley, Dunton & Co., Toronto, ——, 400 bls. wood pulp.

Pulpwood Arrives at Corinth

[FROM OUR REGULAR CORRESPONDENT]

CORINTH, N. Y., December 16, 1929.—Twenty-four carloads of Canadian pulpwood arrived this week in the yards of the International Paper Company, representing the vanguard of upwards of 500 box cars of wood which will be sent here to replenish the mill property between now and late in January. Several cars were sidetracked at the Curtiss Mill and the remainder were unloaded in the yards of the International Mill in order to enable full head operation of the grinder rooms in the two plants and likewish the manufacture of sulphite. The International plant alone uses about 400 cords of pulpwood every twenty-four hours, much of this in the manufacture of sulphite, and it was pointed out that nearly ten cars daily are needed to keep up production. Forty cars are enroute from the region of Whitehall and the arrival of the entire consignment means full time resumption of work in the wood yards and the employment of men laid off during the wood shortage.

Anchor ice forming in the Hudson River this week played havoc with the operation of the International plant besides giving employees a mid-winter touch of work in keeping the ice clear from the river racks. Five of the ten paper machines were forced to shut down because of the anchor ice causing trouble at the mill dam and the electrical department was also forced to curtail power that affected the paper machines.

Rates on News Print Unreasonable

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Dcember 23, 1929.—The Interstate Commerce Commission has found that rates on news print paper, in carloads, from certain points in Minnesota and Canada for that portion of the transportation within the United States to Valley City, Jamestown, and Bismarck, N. D., and points directly intermediate thereto, are unreasonable. Reasonable rates are prescribed and reparation awarded.

Rates on the same commodity from the same origins and other points in Minnesota to the same and other destinations in North Dakota have not been found unreasonable.

The Commission's decision was in the case of the Board of Railroad Commissioners of the State of North Dakota against the Big Fork & International Falls Railway Company.

National Card Addition Nears Completion

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 16, 1929.—A substantial, modern brick and concrete addition to the factory building of the National Card, Mat and Board Company, manufacturers of Nat-Mat card boards, at 4318-36 Carroll Avenue, Chicago, is nearing completion. C. H. Crysler, president, in a recent interview stated that the addition is of the modern daylight type affording under-cover receiving and shipping. These and other improvements throughout the plant will make it possible for the big Chicago concern to render added service to its trade. Mr. Crysler further stated that the expansion was due to the faith of his company in the continued prosperity of of country and to the rapidly growing need for show card boards. Mr. Crysler believes that the year 1930 offers to their principal trade, the wholesale paper jobbers, a real opportunity to increase sales universally.

Paper Mill Employment

There was an increase in both employment and payrolls in the paper and pulp and paper box industries in October as compared with September according to the Bureau of Labor Statistics, Department of Labor, Washington, D. C.

Two hundred and nine paper and pulp mills reported their September employment to have been 58,158 increasing in October to 58,556 an increase of 0.7 per cent. The payrolls in these identical mills also increased from $1,600,237 in September to $1,635,329 in October an increase of 2.2 per cent.

The Bureau also received replies from 191 paper box plants which gave their September employment at 20,348 increasing in October to 21,276 an increase of 4.6 per cent. The payrolls in these plants too, increased from $473,343 in September to $497,490 in October an increase of 5.1 per cent.

News Print Production Increases

A slight increase in news print production in Canada for November over the preceding month took place, notwithstanding a three-day shorter operating period. The output was 252,046 tons, or 132 tons higher than in October and 28,407 tons above the output for November, 1928. During the month Canadian mills operated at 91.2 per cent of capacity as compared with 88.8 per cent in October and 86.9 per cent in November 1928. This is the highest rate of capacity in the industry for the past two years.

PARIS BLACK IN FIBRE CONTAINERS

Still going strong . . have you ordered?

Buyers liked the idea of Paris Black in Fibre Containers right from the start. There has been no let down in the demand—in fact, it is increasing.

Prompt deliveries made from stocks in
NEW YORK
BOSTON
PHILADELPHIA
CHICAGO

So this is a reminder to try it, in case you aren't already a satisfied user. By packing in fibre containers, the full strength and fine quality of Heller & Merz Paris Black reaches your plant unimpaired.

Ask us to quote.

The HELLER & MERZ COMPANY
505 Hudson St. New York
Boston 287 Atlantic Ave. Chicago 146 W. Kinzie St. Springfield, Mass. 40 Albert St. Philadelphia 114 Market St.
Factory—NEWARK, N. J.

St. Regis Paper Company

Daily Capacity, 525 Tons

Newsprint
Catalog and Directory
Packers Oiled Manila
Fibre Wrapping
Specialties

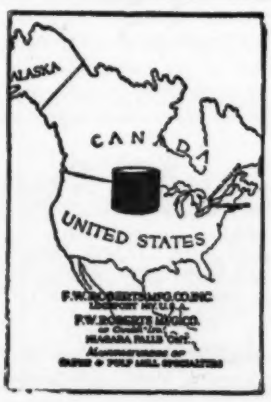
General Sales Office
15 BROAD STREET
NEW YORK

LINDSAY SPIRAL WEAVE FOURDRINIER WIRES

prevent grooving of Seams on machines not equipped with oscillating Suction Boxes. This lengthens the life of wires and increases their production.

THE LINDSAY WIRE WEAVING CO.
14025 Aspinwall Ave.
CLEVELAND, OHIO

BURRS



BURRS

New York Market Review

Office of the PAPER TRADE JOURNAL,
Tuesday, December 24, 1929.

During the past week trading in the local paper market was only moderately active, due mainly to the curtailment of business on account of the Yuletide holiday season. Practically all grades of paper, however, had enjoyed a heavy demand during the last quarter of the year. Prices are generally holding to previously quoted levels.

The news print situation is still involved and the leading executives have not yet come to a unanimous agreement regarding the contract quotation for 1930. Production at the North American news print mills is running at around 83 per cent of capacity and the output is being readily absorbed by the publishers. Stocks in hand are not excessive.

Demand for the various grades of paper board has declined slightly. The price situation remains unsatisfactory. Conditions in the fine paper market are favorable and this branch of the industry has experienced an excellent year. Prices are holding to schedule. The coarse paper market is rather spotty although wrapping paper has been moving in heavy volume.

Mechanical Pulp

Conditions in the ground wood market are practically unchanged. while the prevailing demand is light, offerings are decidedly limited, due to curtailed production at home and abroad. Prices are holding to previously quoted levels, without difficulty, and there is little talk of shading around.

Chemical Pulp

While the local chemical pulp market was rather quiet during the past week, there have been reports of some contract bookings for 1930 delivery. Domestic and foreign producers are said to be well sold ahead on several of the grades. The spot market was practically lifeless. No radical price changes were recorded and shading is infrequent.

Old Rope and Bagging

The old rope market was fairly active. Domestic and imported manila rope were in fair request and mixed rope is still moving in seasonal volume. Prices are practically unchanged. Most of the business transacted in the bagging market was along routine lines. Prices generally remained steady and unchanged.

Rags

Paper mill interest in the domestic rag market is not expected to become persistent until the close of the inventory period. At the same time, some of the grades of cotton cuttings are exhibiting a fairly strong undertone. Domestic roofing rags continue in light demand. No radical changes were recorded in the foreign rag market.

Waste Paper

Irregular conditions prevail in the local paper stock market. The better grades continue in excellent request, especially soft white shavings, which are moving freely into consumption. Demand for the lower grades of waste paper is very light and no improvement is anticipated until after the holidays and the close of the inventory period.

Twine

According to reliable authorities on the industry, the twine market has experienced a highly satisfactory last quarter of the year. Following an unusually heavy movement, demand is falling off, but this seasonal decline was naturally anticipated. Prices are holding to schedule and the outlook for the future is encouraging.

Luzerne Paper Corp. in Bankruptcy

[FROM OUR REGULAR CORRESPONDENT]

HADLEY, N. Y., December 21, 1929.—In an involuntary petition in bankruptcy filed this week by the Luzerne Paper Corporation in Federal court its liabilities are placed at $213,408 and its assets at $907,319. The assets including real estate $585,453; water rights, $300,000; machinery $282,669. William H. Redlien, the treasurer, signed the schedules which were filed through Attorney Shapiro.

The State National Bank of Albany is trustee in a bond issue of $90,000. Other claimants include Albany Felt Company, $2,018, Sager Spuck Supply Company, $814; L.E.Stewart & Co., $5,617; Simmons Machine Tool Corporation, of Albany, $377; Rhodes & Johnson, of Hadley, $1,097; Rome & Cohen, $2,968; Troy Belting Company, $938; Sandy Hill Iron Works, of Hudson Falls, $1,284; Glens Falls Machine Works, $302; F. D. Morehouse $251; J. E. Sawyer & Co., $126; United Rubber and Metal Company, $698; Elixman Paper Core Company, of Corinth, $35; and Noble & Wood, Hoosick Falls, $1,508.

Chemical Products Described

A four color photomicrograph of abietic acid crystals grown in rosin is a feature of a 51 page booklet just issued, describing the chemical products of the Hercules Powder Company.

According to the booklet, abietic acid is a cheap organic acid which research indicates will develop wide commercial use. It is one of a number of terpene chemicals and organic compounds discussed.

The properties and specifications of Hercules naval stores, nitrocellulose, cotton linters, and acids are described in the booklet; and included are historical details and notes on processes employed by Hercules and the industry in general.

The booklet is well illustrated with plant and laboratory scenes. It may be had without cost by writing to the Hercules Powder Company, Wilmington, Del.

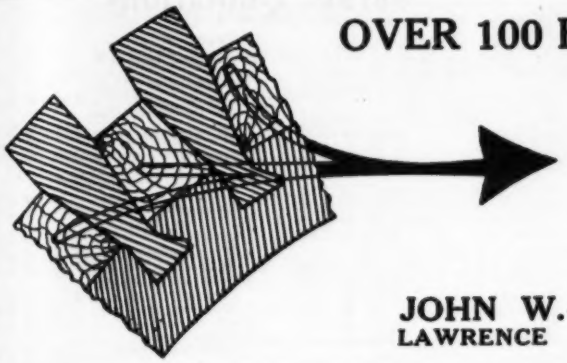
Pulp Shipments To Albany Close for Season

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., December 21, 1929.—The Norwegian freighter *Wagland* docked here this week bringing over 2,000 tons of pulp from Nova Scotia to the plant of the A. P. W. Paper Company and incidentally marked the end of water shipments until next spring. Fifteen foreign vessels made the trip by the river to the docks of the paper company this year and Donald G. Kibbey, traffic manager, announced that operations would be resumed on a more extensive scale next year. The *Wagland* had difficulty in leaving port as the ice in the river necessitated the making of a path by a number of tugs.

Erie City Iron Works Bulletin

The Erie City Ironworks has just issued a new bulletin describing the new Erie City Cross Drum Boiler, single steam header, with hydraulically driven rivets. This new design simplifies the construction and provides a wide selection of sizes, to meet low head-room conditions, and to utilize any standard firing method.



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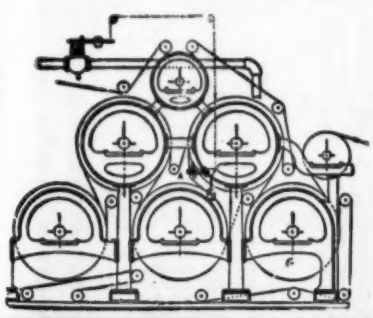

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will do everything we claim for it and more. The test costs you nothing until you are satisfied. Many mills tried one and now have every machine equipped. Write for list of users and other information.

W. F. PICKLES **Buckland, Conn.**

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Tuesday, December 24, 1929.

BLANC FIXE.—The blanc fixe market was moderately active during the past week. Contract shipments were well up to average. Prices are steady. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk, while the powder is selling at from 3¼ cents to 4½ cents a pound, in barrels, at works.

BLEACHING POWDER.—Conditions in the bleaching powder market are practically unchanged. The contract movement is about normal for the season. Prices are generally holding to schedule. Bleaching powder is quoted at from $2.00 to $2.35 per 100 pounds, in large drums, at works.

CASEIN.—Quotations on casein again declined slightly. Domestic casein is now selling at from 14½ cents to 15½ cents per pound. Argentine standard ground is offered at from 14½ cents to 15 cents, and finely ground at from 15 cents to 15½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—The caustic soda market is in a sound position. The bulk of next year's output has already been disposed of. Solid caustic soda is still quoted at from $2.90 to $2.95, and the flake and the ground at from $3.30 to $3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—Demand for china clay is mostly along routine lines at present. Offerings are about sufficient to take care of current needs. Imported china clay is quoted at from $15 to $25 per ton, ship side, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—Contract renewals of chlorine are being booked in satisfactory volume. Chlorine is now quoted at $2.75 per 100 pounds, in tanks, or multi-unit cars, at works, for lots of 250 pounds, or over. For less than quantity, the quotation is $2.85 per 100 pounds, at works.

ROSIN.—The rosin market was fairly active. Prices are practically unchanged. The grades of gum rosin used in the paper mills are quoted at around $8.45 per 280 pounds, in barrels, on dock. Wood rosin is selling at from $6.75 to $7.50 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Offerings of salt cake are still decidedly scarce. Demand for this product is quite persistent, with the result that prices continue firm. Salt cake is quoted at from $22 to $23 per ton, while chrome salt cake is selling at from $20 to $21 per ton, in bulk, at works.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Contract renewals for the coming year are being booked in good volume. Prices are holding to schedule. Contract quotations on soda ash, in car lots, at works, are as follows: in bags, $1.32½, and in barrels, $1.55.

STARCH.—Business in the starch market was fairly satisfactory during the past week. Supplies are going forward to the paper mills in seasonal volume. Prices are unchanged. Special paper making starch is quoted at $3.82 per 100 pounds, in bags, and at $4.09 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—The sulphate of alumina market was quiet, due mainly to the holiday feeling. The contract movement, however, was satisfactorily. Prices remain unaltered. Commercial grades are quoted at from $1.40 to $1.55, and iron free at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—Supplies of sulphur are moving into consumption at a steady pace. Sulphur is quoted at $18 per ton, at mine, for 1,000 tons or over, on yearly contracts, and at $20 per ton for any smaller quantity over the same period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Normal conditions continue to prevail in the talc market. Contract shipments are going forward with regularity. Prices remain unchanged. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines, while imported talc is selling at from $18 to $20 per ton, in bags, ship side.

Market Quotations

Paper
(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@53.25
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine sized	8.00	@11.00
Book, Cased—		
S. & S. C.	6.00	@ 7.50
M. F.	5.75	@ 7.00
Coated and Enamel	7.50	@12.00
Lithograph	7.50	@12.00
Tissues—Per Ream—		
White No. 1	.75	@ 1.00
Anti-Tarnish	1.35	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .80
Kraft	1.00	@ 1.10
Manila	.75	@ .80
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	5.00	@ 5.50
Southern	4.45	@ 4.70
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
Screenings	3.00	@ 3.25
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

(Delivered New York)

News, per ton—		
Rolls, contract	62.00	@ —
Rolls, spot	62.00	@ —
Sheets	67.00	@ —
Side Runs	47.00	@52.00
Boards—per ton—		
News	37.50	@40.00
Straw	52.50	@55.00
Chip	35.00	@37.50
Binders' Boards	65.00	@70.00
Wood Pulp	80.00	@85.00
65 Test Jute Liner	45.00	@47.50
85 Test Jute Liner	50.00	@55.00
Sgl. Mla. Ll. Chip	47.50	@50.00

Mechanical Pulp
(On Dock)

No. 1 Imported—		
Moist	30.00	@32.00
Dry	32.00	@34.00

(F. o. b. Mill)

No. 1 Domestic	26.00	@30.00
Screenings	15.00	@20.00

Chemical Pulp
(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	3.75	@ 4.25
Easy Bleaching	3.00	@ 3.15
No. 1 strong unbleached	2.75	@ 3.00
Mitscherlich unbleached	2.80	@ 3.25
No. 2 strong unbleached	2.40	@ 2.60
No. 1 Kraft	2.35	@ 2.50
No. 2 Kraft	2.30	@ 2.40
Sulphate—		
Bleached	3.40	@ 3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	3.20	@ 4.75
Easy Bleaching Sulphite	2.65	@ 3.00
News Sulphite	2.50	@ 2.70
Mitscherlich	3.00	@ 3.25
Kraft (Domestic)	2.10	@ 3.30
Soda Bleached	3.10	@ 3.25
Sulphate Screenings—		
Coarse	.75	@ .95
Refined	1.65	@ 1.85

Domestic Rags
New Rags
(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	10.50	@11.00
New White, No. 2	8.00	@ 8.50
Silesias No. 1	7.50	@ 8.00
New Unbleached	11.00	@11.50
New Blue Prints	5.25	@ 5.50
New Soft Blacks	5.25	@ 5.75
Blue Overall	7.50	@ 8.00
Washables	4.75	@ 5.25
Fancy	5.75	@ 6.25
Mixed Khaki Cuttings	4.75	@ 5.25
Pink Corset Cuttings	8.00	@ 8.50
O. D. Khaki Cuttings	5.15	@ 5.75
Men's Corduroy	3.75	@ 4.25
New Mixed Blacks	3.50	@ 3.75

Old Rags

White, No. 1—		
Repacked	5.50	@ 6.00
Miscellaneous	4.50	@ 5.00
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.50	@ 2.75
St. Soiled, White	2.00	@ 2.15
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.75	@ 2.00
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.70	@ 1.80
No. 1	1.70	@ 1.80
No. 2	1.55	@ 1.65
No. 3	1.30	@ 1.40
No. 4	1.25	@ 1.35
No. 5A	.90	@ 1.05

Foreign Rags
New Rags

New Dark Cuttings	2.50	@ 3.00
New Mixed Cuttings	2.75	@ 3.25
New Light Silesias	7.00	@ 7.50
Light Flannelettes	7.50	@ 8.00
Unbleached Cuttings	10.00	@11.00
New White Cuttings	10.00	@10.50
New Light Oxfords	7.00	@ 7.50
New Light Prints	5.50	@ 6.50

Old Rags

No. 1 White Linens	7.25	@ 8.00
No. 2 White Linens	5.75	@ 6.75
No. 3 White Linens	4.75	@ 5.25
No. 4 White Linens	3.00	@ 3.50
No. 1 White Cotton	5.50	@ 6.50
No. 2 White Cotton	4.50	@ 5.50
No. 3 White Cotton	3.00	@ 4.00
No. 4 White Cotton	2.00	@ 2.10
Extra Light Prints	2.75	@ 3.25
Ord. Light Prints	2.25	@ 2.50
Med. Light Prints	1.95	@ 2.10
Dutch Blue Cottons	2.20	@ 2.35
French Blue Linens	2.75	@ 2.85
German Blue Linens	2.35	@ 2.55
German Blue Cottons	2.10	@ 2.20
Checks and Blues	1.85	@ 2.00
Lindsay Garments	1.85	@ 1.95
Dark Cottons	1.55	@ 1.60
Old Shopperies	1.50	@ 1.55
New Shopperies	1.50	@ 1.55
French Blues	2.10	@ 2.25

Old Rope and Bagging
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.50	@ 1.60
Domestic	1.60	@ 1.70
Wool Tares, light	1.60	@ 1.65
Wool Tares, Heavy	1.60	@ 1.70
Bright Bagging	1.60	@ 1.70
Small Mixed Rope	1.25	@ 1.40
Manila Rope—		
Foreign	4.40	@ 4.60
Domestic	4.75	@ 5.00
New Burlap Cut	2.75	@ 3.00
Hessian Jute Threads—		
Foreign	3.50	@ 4.00
Domestic	3.25	@ 3.50

Old Waste Papers
(F. o. b. New York)

Shavings—		
Hard, white, No. 1	3.00	@ 3.25
Hard, white, No. 2	2.40	@ 2.55
Soft, White, No. 1	2.40	@ 2.55
White envelope cuttings	2.90	@ 3.10
Flat Stock—		
Stitchless	1.45	@ 1.55
Overissue Mag.	1.45	@ 1.55
Solid Flat Book	1.40	@ 1.50
Crumpled No. 1	1.00	@ 1.10
Solid Book Ledger	2.00	@ 2.10
Ledger Stock	1.40	@ 1.50
New B. B. Chips	.45	@ .55
Manilas—		
New Env. Cut	2.40	@ 2.60
New Cuttings	1.50	@ 1.75
Extra No. 1 old	1.25	@ 1.35
Print	.60	@ .65
Container	.40	@ .50
Bogus Wrapper	.60	@ .65
Old Kraft Machine Compressed bales	1.65	@ 1.75
News—		
No. 1 White News	1.65	@ 1.75
Strictly Overissue	.65	@ .70
Strictly Folded	.55	@ .60
No. 1 Mixed Paper	.25	@ .30
Common Paper	.15	@ .20

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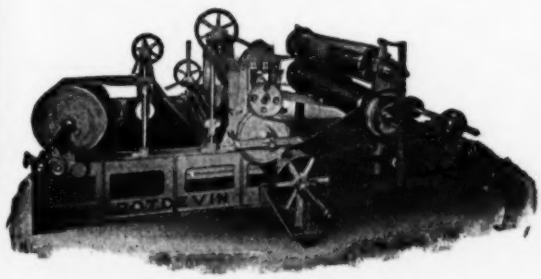

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OPEKISKA, W. VA.

Twines
(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.19	@	.21
No. 2	.18	@	.20
Tube Rope—			
4-ply and larger	.16	@	.17
Fine Tube Yarn—			
5-ply and larger	.21	@	.25
4-ply	.25	@	.29
3-ply	.28	@	.32
Unfinished India—			
Basis	.13	@	.14
Paper Makers Twine			
Balls	.11	@	.12
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.17	@	.19
Amer. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.14	@	.16
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Rope	.22	@	.24

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¾	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.06¼	@	.06½
Southern Kraft	4.25	@	4.50
No. 2 Kraft	.04	@	.04¼
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	42.50
Solid News	47.50	@	—
Solid News	40.00	@	45.00
Manila Lined Chip	50.00	@	55.00
Container Lined—			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.20	@	2.25
White Env. Cuttings	2.40	@	2.50
No. 1 Soft Shavings	2.00	@	2.10
No. 1 Mixed	.60	@	.70
No. 2 Mixed	.50	@	.60
Ledger & Writings	1.25	@	1.35
Solid Books	1.05	@	1.10
Blanks	1.40	@	1.50
Krafts	1.60	@	1.75
New Kraft Cuts	2.15	@	2.25
Manila Envelope Cuttings	1.75	@	1.80
Ex. No. 1 Manila	1.30	@	1.45
Print Manila	.70	@	.75
Folded News (overissue)	.65	@	.70
Old Newspapers—			
No. 1	.65	@	.70
No. 2	.55	@	.65
Mixed Papers—			
No. 1	.50	@	.60
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.06	@	.40
Ledgers	.09	@	.40
Writings—			
Superfine	.12½	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.10	@	.20
Book, M. F.	.05½	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.09½	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.08	@	.09
Manila Sul., No. 1	.04	@	.05¾
Manila No. 2	.03	@	.04
No. 2 Kraft	.06	@	.06¾
No. 1 Kraft	.06½	@	.07
Common Bogus	.03½	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	52.50	@	70.00
News Board	37.50	@	40.00
Chip Board	35.00	@	47.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.10¼	@	.11
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
Fancy	.05½	@	.06
New Black Soft	.05	@	.05¾
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.20	@	3.25
No. 2 Hard White	2.75	@	3.00
No. 1 Soft White	2.80	@	2.90
No. 2 Soft White	1.80	@	1.90
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.85	@	1.90
Writing Paper	1.60	@	1.65
No. 1 Books, heavy	1.40	@	1.50
No. 2 Books, light	1.05	@	1.15
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	.95	@	1.00
Container Manila	.85	@	.90
Old Kraft	2.25	@	2.50
Common paper	.50	@	.55
No. 1 Mixed Paper	.60	@	.65
Straw Board, Chip	.60	@	.65
Binders Board, Chip	.60	@	.65
Overissue News	.80	@	.85
Old Newspaper	.50	@	.55

Domestic Rags (Old)

White, No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
White, No. 2	2.00	@	2.25
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings (Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.65	@	1.75
Repacked	.01¼	@	.01
No. 2	1.30	@	1.35
No. 3 (Rooфng)	1.15	@	1.25
No. 4	1.00	@	1.15
No. 5A	.75	@	.85
B	.65	@	.75
C	.65	@	.75

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.06¼	@	.06½
No. 2 Kraft	.04½	@	.05½
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print Rolls	61.50	@	—
Straw Boards, rolls .009			52.50
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board	37.50	@	40.00
Chip Board	35.00	@	37.50
Single Manila Lined Chip	50.00	@	—
Single White, Patent Coated Newsboard Bender	65.00	@	80.00
Wood Pulp Board	80.00	@	85.00
Binder Boards	70.00	@	75.00

(F. o. b. Mill)

Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.40	@	2.50
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	2.35	@	2.45
No. 1 Books, Heavy	1.50	@	1.55
No. 1 Books, Light	—	@	1.15
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	.90	@	1.00
White Blank News	1.50	@	1.60
Old Kraft	.165	@	1.85
Print Manila	.80	@	.90
No. 1 Mixed Paper	—	@	.35
Overissue News	.60	@	.70
Old Newspapers	.45	@	.50
Box Board, Chip	.45	@	.50

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.40	@	1.50
Manila Rope—			
Foreign	—	@	4.25
Domestic	—	@	4.50
Transmission Rope	—	@	3.00
Mixed Strings	1.00	@	—
Jute Wool Strings	1.00	@	1.05
Jute Carpet Threads	1.05	@	1.15
Scrap Burlaps	—	@	1.35
Scrap Sisal	1.80	@	2.00
Scrap Sisal for shredding	1.85	@	2.00
Wool Tares, heavy	1.60	@	—
New Burlap Cutting	1.90	@	2.00
Australian Wool Pouches	3.00	@	3.12½

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.09½	@	.10
Silesias, No. 1	.06	@	.06¼
New Unbleached	.10	@	.10½
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¾
New Black, soft	.04	@	.04¾
Khaki Cuttings	.04	@	.04¾
O. D. Khaki	.05	@	—
Corduroy	.03	@	.03¾
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	1.90
Black Stockings	—	@	4.00
Roofing Stock—			
No. 1	1.65	@	1.75
No. 2	1.45	@	1.55
No. 3	1.05	@	1.10
No. 4	1.10	@	1.15

Foreign Rags
(F. o. b. Boston)

Dark Cottons	—	@	1.55
New No. 1 Shirt Cuttings	9.00	@	9.50
Dutch Blues	2.00	@	2.12½
Lace Curtains	4.75	@	5.00
New Checks & Blues	4.25	@	4.60
Old Fustians	1.90	@	2.00
Old Linsey Garments	1.80	@	1.85

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¼	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	11.50	@	—
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.80	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.00	@	—
M. G.	7.00		—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	31.00	@	32.00
Sulphite easy bleaching	60.00	@	—
Sulphite news grade	60.00	@	—
Sulphite, bleached	77.00	@	78.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.40	@	—
Light and Crumpled Book Stock	1.25	@	—
Ledgers and Writings	1.50	@	—
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.85	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.65	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09¼	@	.10
Fancy Shirt Cuttings	.06	@	.06¼

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PAPER TRADE JOURNAL

Reg. U. S. Pat. Off.
10 EAST 39th ST., NEW YORK

Vol. LXXXIX, No. 26 DECEMBER 26, 1920 United States, Per Annum, $4.00 Canada and Foreign Countries in Postal Union, $6.00

You can "lick" this loss *with the* Removable

Chart shows how a paper mill spends its time.

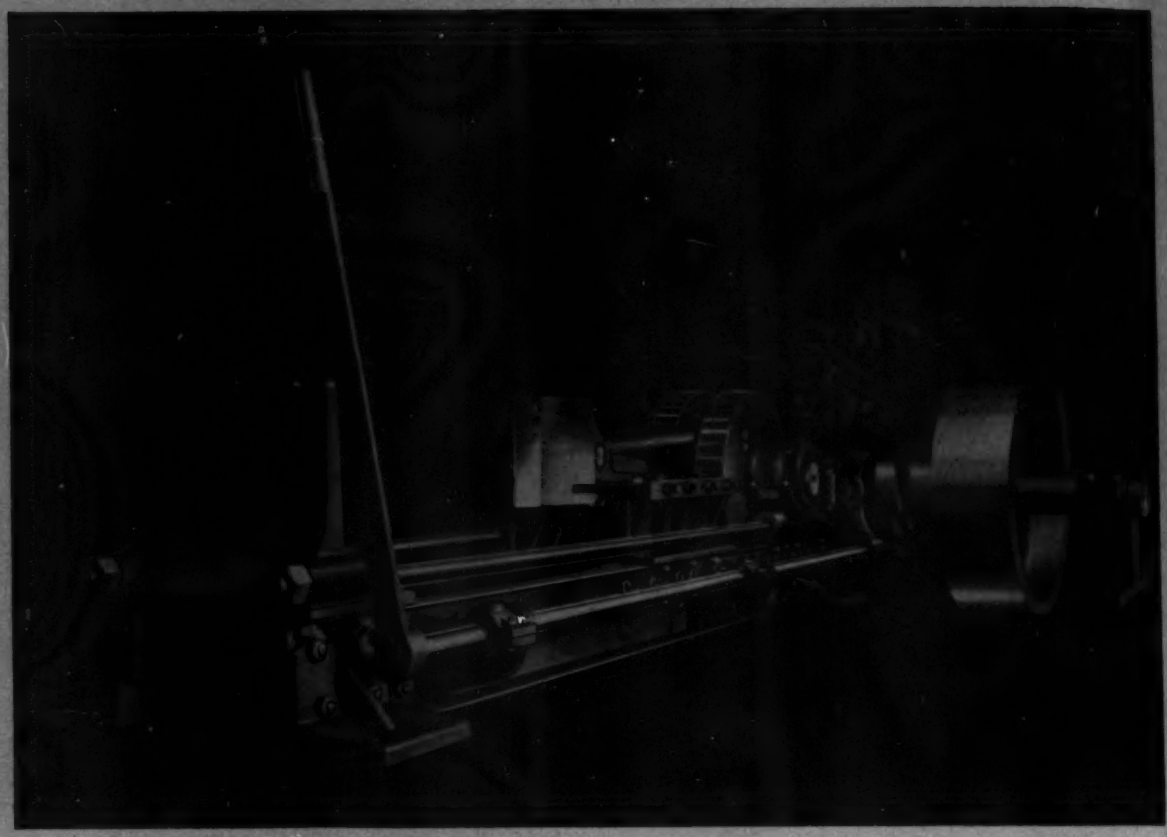
THE News Print Service Bureau's report on "How a Paper Mill's Days Are Spent" was the basis for the chart shown here. Among other facts, is presented the surprising statement that only 30 days in every year are available to the mill for profit-making. *If* there are no "shut-downs."

You can minimize shut-downs and unproductive time—and often turn losses into profits, and make small profits greater by utilizing the *Removable* Fourdrinier.

Some vital facts, gleaned over a period of seven years, during which a remarkable transformation has taken place in the mechanics of papermaking, are yours for the asking. Write for them.

The *Beloit* Way is the *Modern* Way

BELOIT IRON WORKS, BELOIT, WIS., U. S. A.



INCREASED PRODUCTION

Large production is possible with the Appleton Horizontal Splitter in splitting large size pulpwood. The wood is conveyed to the axe and delivered mechanically. It is never lifted. The production of this splitter is limited only by the speed with which the operator can bring the wood to the axe.

ECONOMY OF OPERATION

There is a saving of at least one man in handling the wood where the Appleton Horizontal Splitter is used. The splitter is in complete control of one operator who also controls the conveyor carrying the wood to and from the axe. Mechanically it is economical both in operation and upkeep.

SAFETY FOR THE OPERATOR

Accidents from flying sticks and splinters that are common with most splitters do not occur with the Appleton Horizontal Splitter. With the strong, positive stroke of the axe the wood is wedged open with a clean cut. The axe does not stick in the wood. Production, Economy and Safety are features of the Appleton Horizontal Splitter.

THE APPLETON MACHINE COMPANY
Appleton Wisconsin

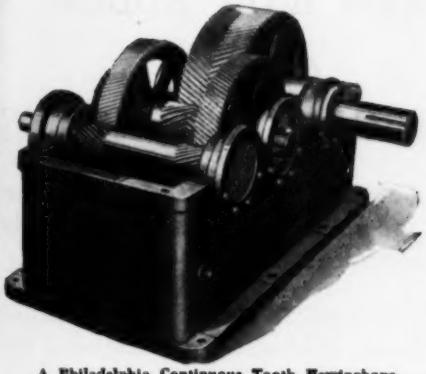
THE APPLETON HORIZONTAL SPLITTER

Entered as second class matter August 12, 1925, at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. ESTABLISHED 1872 FIFTY-EIGHTH YEAR Published every Thursday by the Lockwood Trade Journal Co., at 34 N. Crystal St., E. Stroudsburg, Pa. EXECUTIVE AND EDITORIAL OFFICES: 10 East 39th Street, NEW YORK CITY. CHICAGO: 123 West Madison Street, Chicago, Ill.

For Transmitting Power Economically

in the Paper Industry use

Philadelphia
SPEED REDUCING UNITS
(ONE NAME-ALL TYPES)

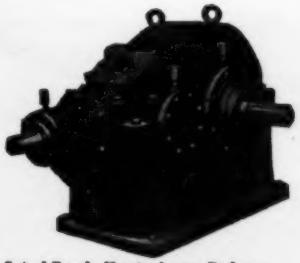


A Philadelphia Continuous Tooth Herringbone Speed Reducer

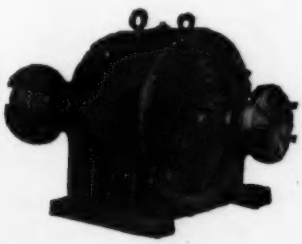
Another Philadelphia product is ground Thread Worms. These are of our own design and cut to a point of precision on our own special grinders. Complete details about these will be sent on request.

Phillie Gear Speed Reducers are designed and built to transmit the maximum amount of power without waste, and to do this for the longest period of time without breaking down or wearing out. That's real economy. And another point,—they are made in all types,—that means that you're sure to get the type that's most suitable for the job it's to be put to.

Our engineers will gladly investigate your requirements and make unbiased recommendations, without obligation to you.



Spiral-Bevel Herringbone Reducer



Spur Reducer

PHILLIE GEAR

Speed Reducers are the ideal drive for:

Agitators	Pumps
Filters	Rolls
Pulp Screens	Save-alls
Cutters	Beaters
Winders	Stokers
Slitters	Rotary Driers
Calenders	Conveyors

Main Office and Plant Erie Ave. and G St. Phila., Pa.

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Manufacturers of Industrial Gears and Speed Reducing Units

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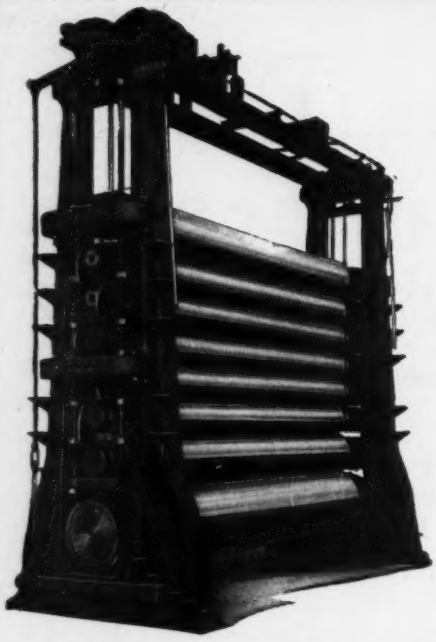

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CHILLED IRON ROLLS

AND

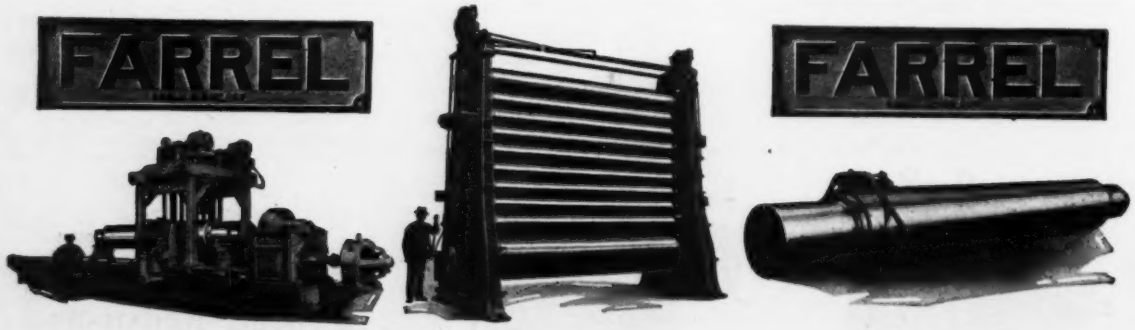
MACHINE CALENDER STACKS

Specified on your new machine or for the new rolls for your old stacks insures rolls of maximum hardness and perfect finish.

Calender stacks are equipped with either Electric Motor, Hydraulic, or Ratchet Lift, all operated from the floor.

Improved Oiling Systems either completely circulating with oil filters and sight feed—Ring oiling closed end boxes—or a combination of both.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE.



FARREL NEW TYPE ROLL GRINDER is electrically driven throughout, and is made in 24", 32", 36" and 42" sizes. All sizes are fitted with Geared Head, New Crowning Device and Automatic Lubrication.

FARREL CALENDERS are equipped with Electric, Hydraulic or Ratchet Lift, all operated from the floor.

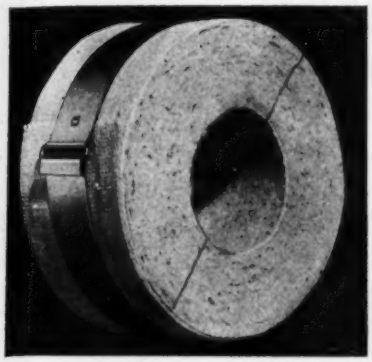
FARREL ROLLS are made as large as 298" on the face. Known all over the world.

FARREL INDICATING ROLL CALIPER is extremely accurate. The majority of the parts are made of aluminum alloy, making a light weight instrument. Rolls may be calipered to the end of the face without reversing the caliper.

FARREL-BIRMINGHAM COMPANY INC.,
ANSONIA, CONN.

Successor to: { Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848.
Birmingham Iron Foundry, Derby, Conn., Est. 1836.

Pipe lines . . that suffer from Hard Knocks and Vibration need this long lasting Insulation



ASBESTO-SPONGE FELTED INSULATION—

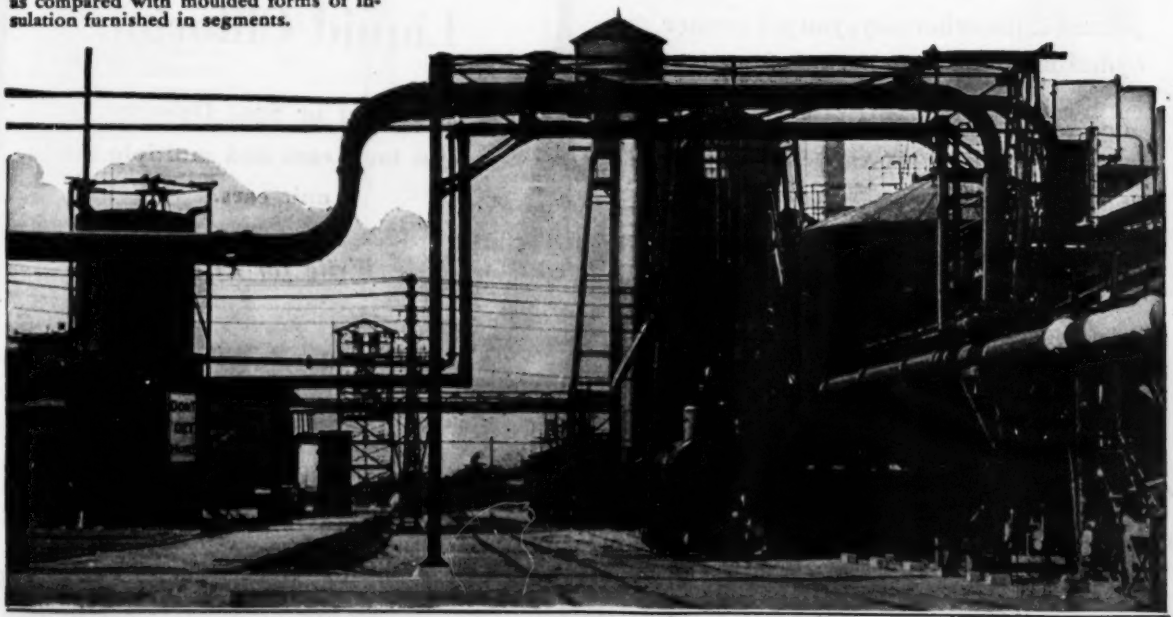
is adaptable to all sizes of piping with the minimum expenditure for labor. This particularly applies to large pipe sizes, where this insulation is furnished in one piece, as compared with moulded forms of insulation furnished in segments.

ROUGH treatment is the daily lot of steam pipe covering that crosses yard tracks and driveways. Even inside the plant where steam lines run from department to department the pipe covering that protects them is most generally subjected to considerable abuse and open to accidental damage.

J-M Asbesto-Sponge Felted Insulation has been developed to meet just such conditions. It has the in-built stamina to withstand abuse that would ruin ordinary moulded type of pipe insulation in a few years time. It is built to stand wear and destructive vibration. It can be removed and replaced many times without injury and without reducing its efficiency.

J-M Asbesto-Sponge Felted Insulation in addition to unusual toughness and durability has the highest thermal efficiency of any pipe insulation we build. It costs more to buy but the additional heat saving its use assures, the added years of service and the sustained high efficiency it delivers makes it *the cheapest per year* pipe insulation you can buy.

With the growing tendency to use higher temperatures and higher pressures its greater efficiency in saving heat makes J-M Asbesto-Sponge Felted Insulation a paying investment in many cases in which less efficient pipe coverings ordinarily would fill the bill. We welcome an opportunity to show you how you can save money on your next installation.



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INDUSTRIAL INSULATIONS

INCLUDING SUPEREX, SIL-O-CEL-MAGNESIA-ROCK CORK

For all temperatures from 400° F. below zero to the highest industrial temperatures

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Please have an engineer call to discuss Pipe Insulation.

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SPEED HYDRATION with QUARTZ QUALITY SILICATE

Every paper maker is interested in good hydration and particularly in good hydration at a saving. Now silicate of soda steps in. If silicate of soda is added to the beater, you get your usual hydration in a shorter beating time. Or putting it the other way, you get greater hydration in the same period of beating.

May we discuss this function of silicate with you?

Did you ever try "Seal" Brand Silicate for capping rolls? It is a heavier grade than that used in the beater and has more "stickiness." Send for a sample.

Philadelphia Quartz Co.

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Soda Ash

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In tank cars and multiple unit cars.

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Alkalies and Chemical Products Manufactured by The Solvay Process Company
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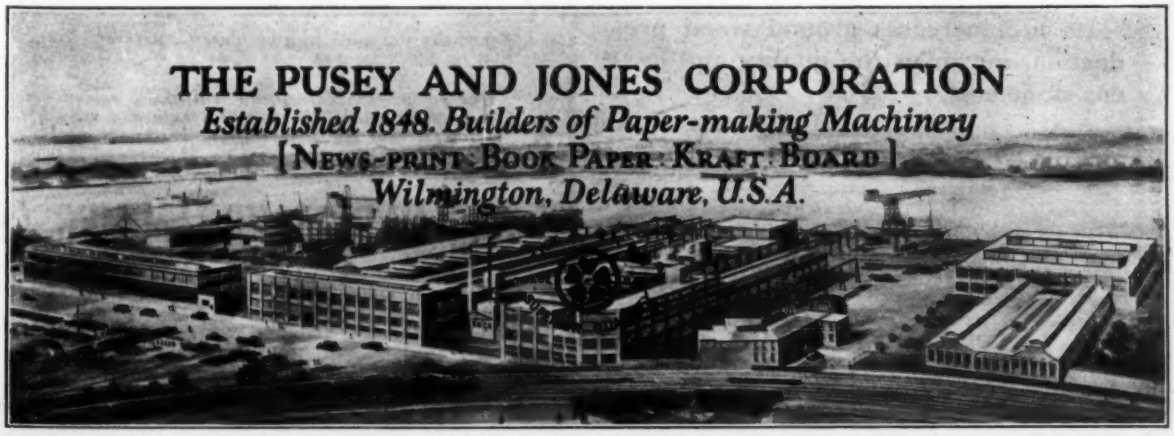
To jack up production, without increased payroll, you can't do better than to install Pusey and Jones Paper-making Machines. The answer to bigger volume—in output, sales, collections and deposits, the added feet delivered like clockwork, hour after hour.


THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-making Machinery
[News-print Book Paper Kraft Board]
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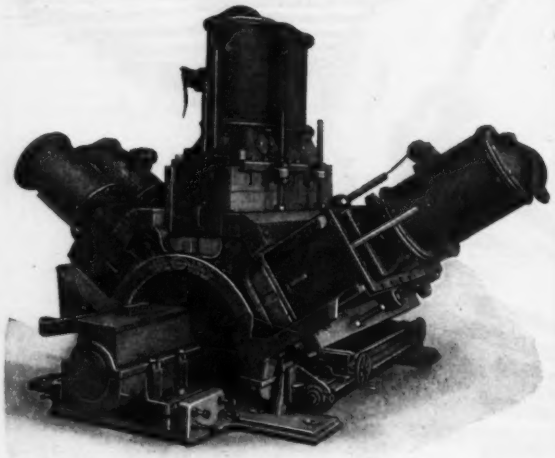


Stone Sharpening

The Curtis Patent Hydraulic Lathe, shown in position on Grinder pictured above, is furnished as standard equipment on all Grinders built by us.

You can specify the Curtis Lathe also for Grinders built by others. It is adaptable to all makes for both 2-ft. and 4-ft. wood.

It can likewise be applied to Grinders now in use.

Its use increases ground wood production, improves the quality and lessens stone cost.

Full Particulars on Request

Montague Machine Co.

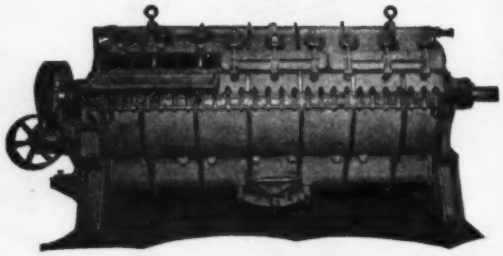
TURNERS FALLS, MASS.

PULP RECOVERY

from black liquors at least 3½ pounds per thousand gallons, by the use of

VALLEZ

ROTATING LEAF FILTERS



Evaporator capacity is increased. Maintenance and labor costs are kept down. Green liquors are cleared of ash and other impurities. Lime is removed and reclaimed from the white liquor.

Vallez Filters give 100% efficiency in the removal of solids on a single filtration. Rotation of the filter leaves makes possible utilization of entire filtering surface to maximum capacity. Sluicing off is accomplished thoroughly within the filter. It is never necessary to remove the leaves for washing, or to open the filter during operation.

J. & G. HEAVY DUTY ROTARY VACUUM FILTERS

Continuous in operation and require a minimum of supervision. Self-discharging; self-cleaning; work automatically. Have high capacity on lime sludges and white waters. Also used as washers and thickeners.

J. & G. Quadruple Effect EVAPORATORS and CONCENTRATORS

Especially designed to give high capacity and concentration on black liquors.

Our engineering department will gladly submit recommendations, complete equipment data and estimates to meet your specific problems. Write for catalog.

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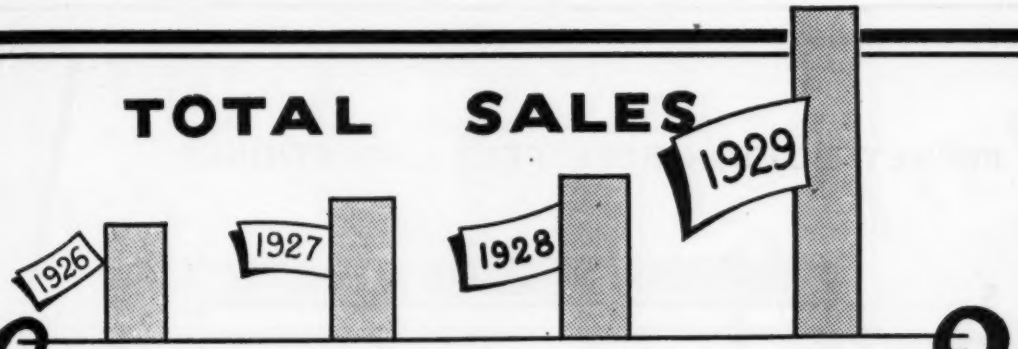

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REPEAT ORDERS

The product has been thoroughly tried . . . found satisfactory, economical, and efficient. The purchase proved a "good buy" in every case. Such has been the history of Filtration Engineers Incorporated.

Now, proud of a record of steady, conservative growth—a record of service painstakingly rendered—of living up to the spirit as well as the letter of contracts we are happy to announce that FEINC sales have doubled. This, we take it, is the reward of conscientious service; and an inspiration for future work.

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HAMILTON AND MONTREAL
(SEWAGE DISPOSAL)

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FILTRATION ENGINEERS INCORPORATED
FE
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General Offices and Plant
NEWARK -:- NEW JERSEY

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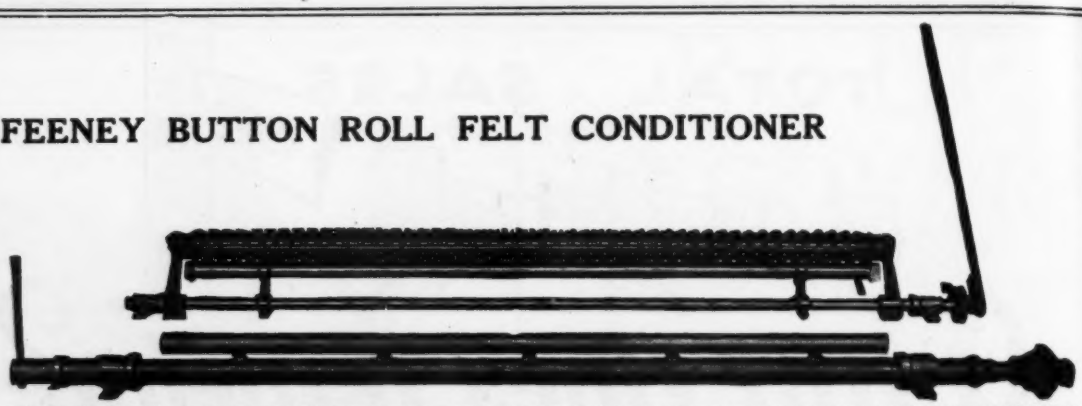
CONTINUOUS FILTERS-DECKERS SAVE-ALLS-WASHERS FOR PAPER PULP

FEENEY BUTTON ROLL FELT CONDITIONER



NECESSARY TO BE IN OPERATION BUT ONE HALF HOUR IN EVERY EIGHT HOURS
ELIMINATES SHUTTING DOWN DURING WEEK TO WASH FELTS
VERY SIMPLE IN CONSTRUCTION AND OPERATION
NO AUTOMATIC PARTS TO GET OUT OF ORDER
USED INTERMITTINGLY—ONLY OFTEN AS DESIRED
PARTS CONSIST OF—

BRASS BUTTON ROLL—To break up any foreign matter, or crust, that may accumulate on face of FELT, Supported in Ball Bearings. Alemite Lubricated.
WATER SPRAY and SUCTION PIPE—These parts run full width of FELT, resting on bearings on side frames of paper machine.

Write for further particulars

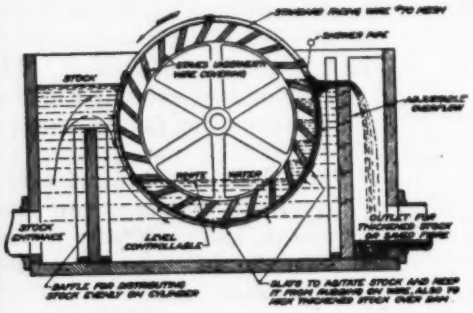
Baker Manufacturing Corporation

Sole Manufacturers under license from Patentee **SARATOGA SPRINGS, N Y.**

GLENS FALLS MACHINE WORKS

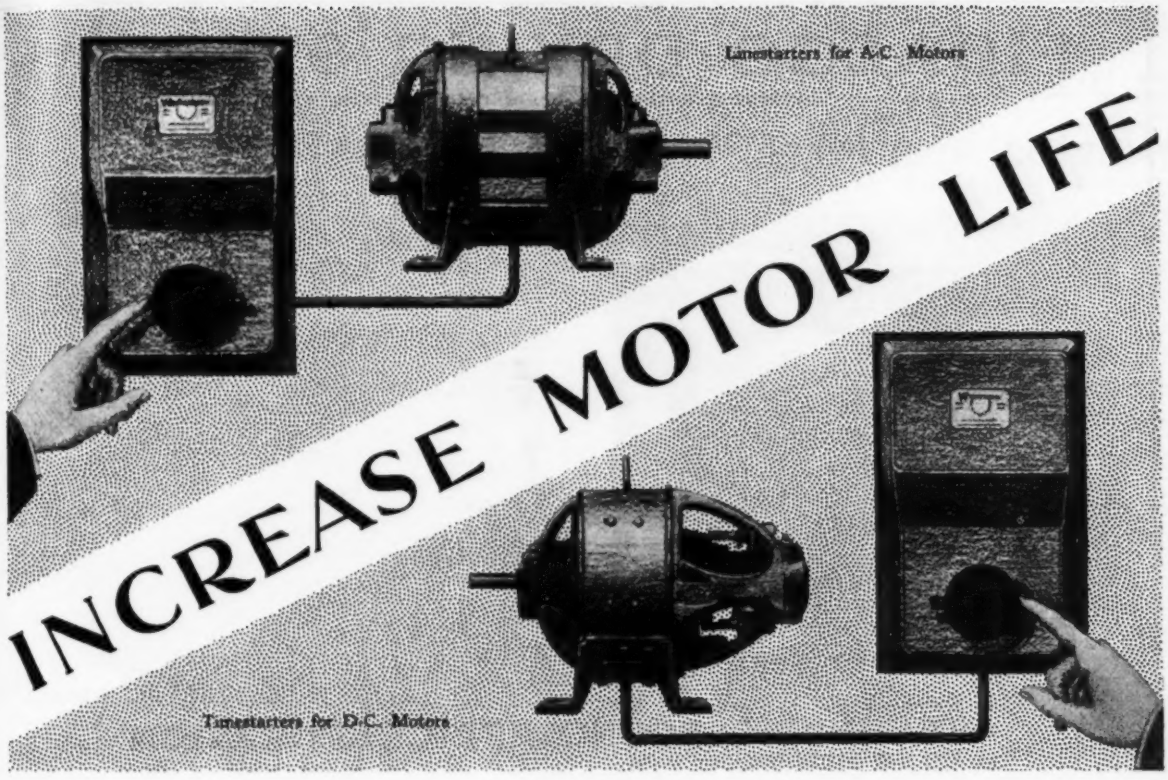
GLENS FALLS, N.Y. RUTLAND, VT.

E. K. MANSFIELD CO.
501 FIFTH AVE. N.Y.C.
EASTERN REPRESENTATIVE



***Wood's Thickener Saveall Water Filter**

**Equipped with Double Sealing Collars.*
Simple, adequate, flexible and economical.
Designed for Sulphite, Sulphate, Soda & Old Paper Processes. Takes feed of any consistency and delivers up to 5.5% as desired.
Ask for the Bulletin: it tells all.



with Westinghouse Starters

YOUR motors will last longer when they are adequately safeguarded against the overloads that shorten motor life.

Westinghouse starters for a-c. and d-c. motors are provided with a particularly sensitive and permanently accurate thermal overload device that affords the highest degree of motor protection.

Additional features:

Combined hand or automatic reset of overload device.
Push button on starter cabinet reduces installation costs.
Ample space in cabinet for wiring.
Small size cabinets take little mounting room.

Thirty years' experience in building and applying control to suit the motor fully qualifies Westinghouse to design equipment that meets your requirements.

Service—prompt and efficient—by a coast-to-coast chain of well-equipped shops.

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EAST PITTSBURGH PENNSYLVANIA

SALES OFFICES AND SERVICE SHOPS IN ALL PRINCIPAL CITIES

Westinghouse

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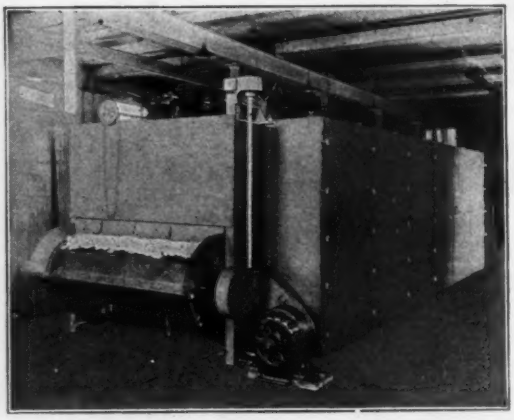
FIDALGO DRYING SYSTEMS

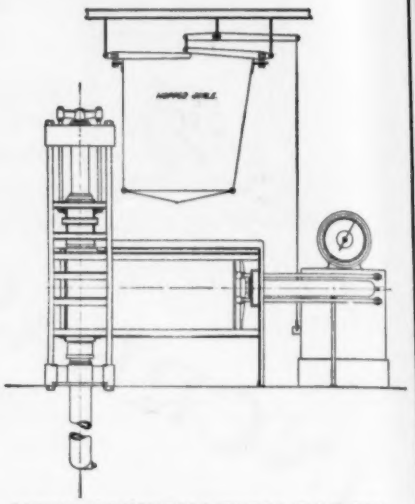
PATENTS GRANTED AND PENDING IN ALL COUNTRIES

INVESTIGATE OUR INSTALLATIONS



ENCLOSED TYPE PULP DRYER

DRY PULP EQUAL TO WET IN STRENGTH



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TECHNICAL ECONOMIST CORPORATION

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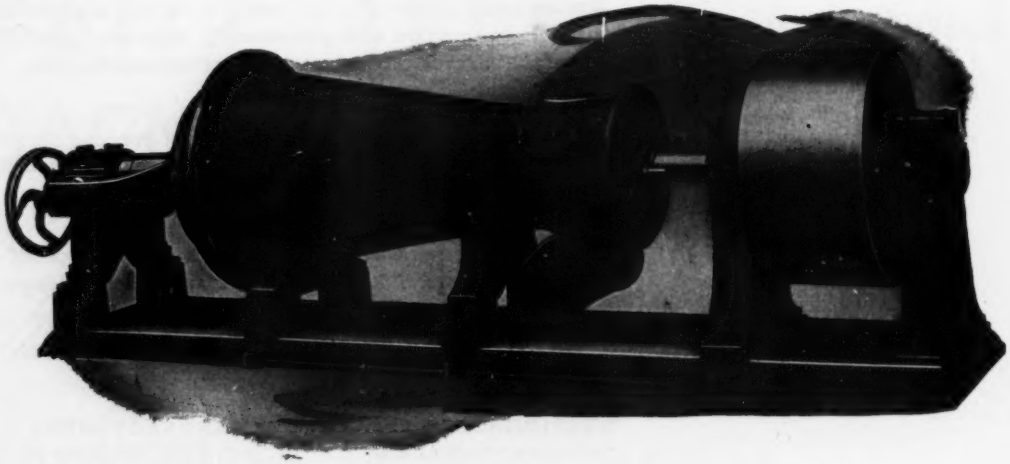
OVER ONE HUNDRED YEARS OF SUCCESS IN DESIGNING AND BUILDING MACHINERY FOR MAKING FINEST GRADES OF PAPER IS A RECORD WARRANTING YOUR CONSIDERATION WHEN DECIDING ON NEW EQUIPMENT.



OUR NO. 60 JORDAN ENGINE

THE SMITH & WINCHESTER MFG. CO.,

SOUTH WINDHAM, CONN.

". . Gentlemen the time has come to improve our handling methods . . "

CONFRONTED with declining net profits and the urgent necessity for lower costs of production, the Board of Directors of a mid-west paper mill approved the purchase of completely modern labor saving handling equipment. Elwell-Parker electric Tructors were selected to form the basic foundation of the new system.

At the end of one year, it was found that each Tructor had made a saving in labor cost more than sufficient to repay its entire original cost.

In the loading of rolls into freight cars, particularly big economies were achieved. The forks of the E-P roll handling Tructor were lowered to the floor, so that when the Tructor was moved up against the end of the rolls, they were picked up bodily and carried away. Arrived at the loading platform, the rolls were deposited at various heights in the doorway of the car, and then rolled into crosswise position in three tiers.

The nearest Elwell-Parker Engineer has an interesting story of handling economies for you. He will be glad to discuss the application of E-P Tructors to your problems. The coupon below is for your convenience. Make use of it *now*. No obligation of course.

ELWELL-PARKER TRUCTORS

Designers and Builders of Electric Industrial Trucks, Tractors and Cranes for 24 Years

THE ELWELL-PARKER ELECTRIC COMPANY, 4500 St. Clair Avenue, Cleveland, Ohio

☐ **Please send me information about the application of electric trucks to our work. We handle .....**
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Name ..... **Position** .....

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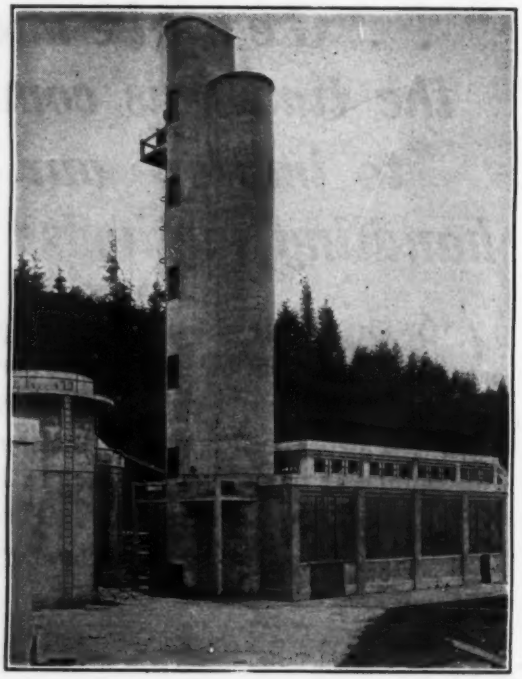

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Jenssen Spray Type Cooler
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Uncle Jake Says—

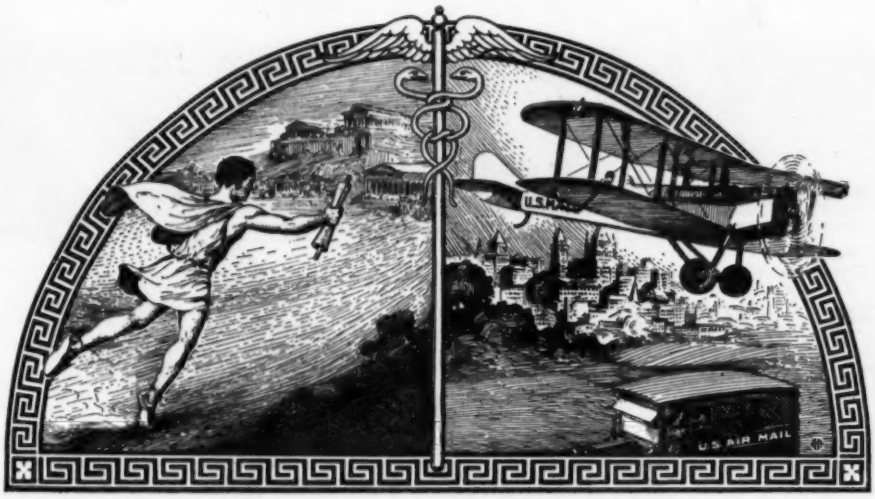
"The world owes a living only to the man who earns it, hence a lot of people are getting head over heels in debt."

If by the quality of our product and the service we give you, we do not earn the right to ask for your business, we have no right to expect it. The unusual fine quality of our

KVP PAPERS

we feel gives us this right.

KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN



Giving Wings to the Written Word

WHEN Greek met Greek in the ancient days and business negotiations were started, the final decision usually required person-to-person conference. When it happened that the outcome was delayed and the closing date of the option was near at hand, then indeed did the letter transport of those days reveal its deficiency.

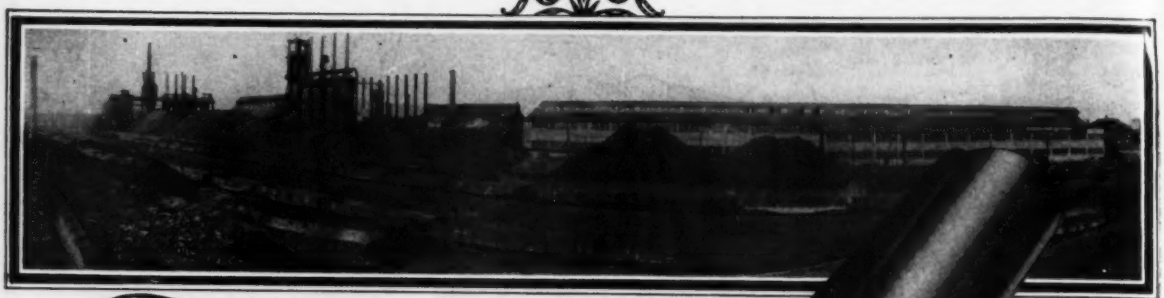
Many a time did the Attic business man write his belated acceptance upon a piece of treated sheepskin imported from Pergamum, roll this about a rounded stock, seal it with a wax impression from his official ring, and entrust it to a fleet-footed son of Hermes. Woe to the business deal if the messenger developed a weak heart or a stone-bruised heel!

The time that it required Athenian "special delivery" to convey a message from the center of culture to Megara, 30 miles away, now serves as quite enough for the winged descendants of Kitty Hawk to lift a half-ton of modern correspondence across the roofs and tree tops between New York and Chicago.

No longer does the mild-mannered sheep supply the basis of written records and the interchange of business agreements. Vegetable fibres—cellulose from shrubs and trees—white, plentiful, and inexpensive, now carry the business world's "yes" and "no."

Hammermill Paper Company

Erie, Pennsylvania



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A Distinctive Feature of Every Length of Centrifugally Cast Bronze

Shenango-Penn is the only Company that makes bronze cylinders by the ingenious centrifugal casting method.

This exclusive method makes possible the production of a bronze cylinder that is perfect in grain texture and density from end to end.

Moreover, the outside and inside surfaces possess a finish so naturally smooth and close to specified diameters that the very minimum of machining is required.

So why not avail yourself of these inherent advantages? Write us for detailed information and quotations.

SHENANGO-PENN MOLD COMPANY

Oliver Building Pittsburgh, Penna.

Works at Dover, Ohio and Sharpsville, Pa.

SHENANGO PENN CENTRIFUGALLY CAST BRONZE

Before Your Annual Meeting

Consider this time and money saving method for your building program

As your company considers the prospect of new plant construction for 1930, whether a new mill, branch plant, warehouse, power plant, or extension, these facts must interest you.

1. The Austin Method saves both time and money, as evidenced in numerous projects in the paper and allied industries.

2. Austin cooperates fully with your engineers, either working from your plans or furnishing complete engineering designs to meet your requirements.

3. Because of unusually wide experience and advanced methods acquired in designing and building hundreds of industrial projects, Austin Engineers can often suggest very important savings both in design and construction.

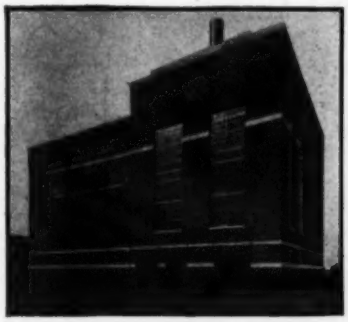
4. This modern way of building, called The Austin Method of Undivided Responsibility, makes possible these positive guarantees to the customer:

a Total cost for the complete project, in advance

b Completion date within a specified short time

c High quality of materials and workmanship

As a suggestion, Austin will be glad to discuss with you or with someone whom you may designate, in confidence, any proposed building projects; and furnish helpful data and approximate costs, in time for your annual meeting, whether it is *two days or two weeks away.*



Up-to-the-minute power plant designed, built and equipped by Austin in connection with a complete industrial plant representing several millions of dollars, an Austin Undivided Responsibility project.

With district offices from Coast to Coast, Austin can serve you quickly and well, on any type or size of project, anywhere.

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Engineers and Builders • Cleveland

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Memo to The Austin Company, Cleveland— We are interested in a.....project containing.....sq. ft. Send me a personal copy of ☐ "The Austin Book of Buildings." Individual ..... Firm ..... City.....PTJ-12-26-29

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Discharging shredded stock directly into beater.
Mounted on platform, eliminating conveyor system.
Saves furnish time, beater time and power.
Especially adapted to telephone directories, catalogs and news over issues. Will make 2000 lb. furnish in fifteen minutes. Excessive peak loads on beater entirely eliminated as shredded stock is in uniformly fine pieces. Can be mounted on truck if desired.

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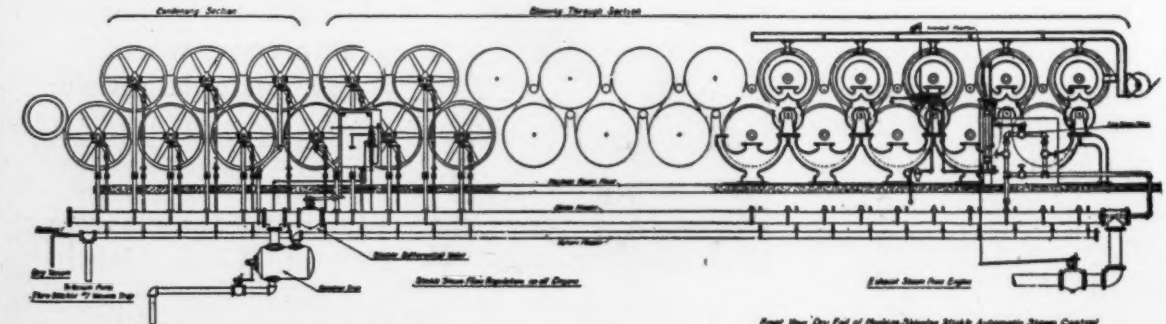
STICKLE'S SYSTEM OF DRYING PAPER



Back View Wet End of Hoshare Stanley Stickle Compound Differential Rapid Circulating Drainage System

Front View Dry End of Hoshare-Stanley Stickle Automatic Steam Control

The Stickle Automatic Steam Control and Differential Rapid Circulating Drainage System will automatically maintain an evenly dried sheet at the lowest possible pressure at which a sheet of paper can be dried. The sheet will be held close to a one-half of one per cent moisture change.

Ask for Bulletin No. 18

STICKLE STEAM SPECIALTIES CO.
NEW YORK INDIANAPOLIS, IND. BOSTON

A GUARANTEE INSTEAD OF A GUESS

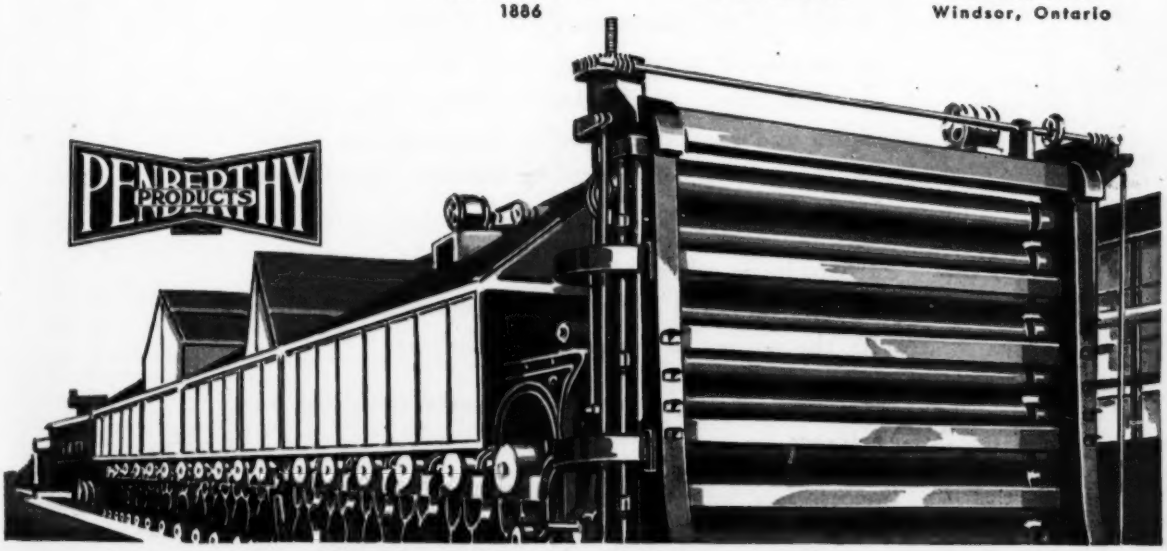
YOU can now pay for Penberthy Paper Drier Equipment out of the savings it is guaranteed to make. But to determine whether or not the Penberthy Equipment will be a profitable investment for you, an engineering survey of your present operating costs and conditions is made. You will then receive a proposal embodying a written guarantee that the Penberthy Equipment will effect definite savings. This is based upon the records of a large number of previous installations.

This survey is made under the supervision of your engineers but without expense to you or obligation to purchase the Penberthy Paper Drier Equipment.

This offer is irrespective of the drying system now in use. Almost without exception, the Penberthy Equipment will pay for itself in less than a year.

Wire or write for complete information.

PENBERTHY INJECTOR COMPANY
Established in 1886 DETROIT Canadian Plant: Windsor, Ontario



PENBERTHY PAPER DRIER EQUIPMENT

The Coe Dryer Catalog describes this machine in detail and explains how any-one interested may use the Laboratory Dryer without obligation.

The COE

Board Dryer

THE Coe Continuous Dryer, now the accepted standard drying machine of the Board Industry, is a remarkable achievement, based upon many years of specialization. It combines proven engineering principles and mechanical genius in a machine which attains the utmost efficiency in modern straight-line production.

Perhaps in no other instance can a prospective buyer approach, with equal advance assurance of satisfactory results, the subject of purchasing a machine.

Over 80% of all boards manufactured are dried on Coe Dryers.

Success has been attained in drying every kind of material from which boards are made.

In many instances Coe Engineers have co-operated with manufacturers in developing boards, affording them use of the New Coe Laboratory Dryer.

The COE MANUFACTURING CO.

432 BANK ST. PAINESVILLE, OHIO

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EASTWOOD WIRE CORPORATION, BELLEVILLE N.J. U.S.A.

The TRIMBEY-SHEVLIN "Senior"

A Simple, Low Power, HIGH Capacity machine.
Few parts, low upkeep, plates always clean.
We compare it with the
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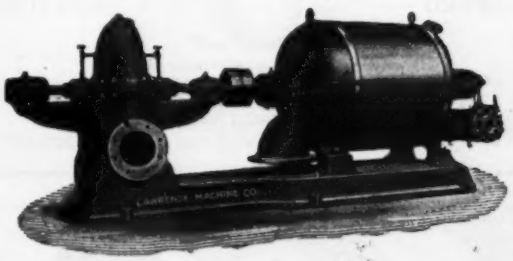
Horizontally Split Casing Double Suction Pumps

LAWRENCE PUMPS

The name protects and guarantees you satisfaction.
We are the original designers and builders of the LAWRENCE PUMP



Lawrence pumps for all conditions and services. Forty-four years of practical experience with centrifugal pump development places us among the leaders. Our efforts have been rewarded by the acceptance of our product in general.

Thousands of installations and the successful performance of our pumps should be sufficient proof of our ability to handle your pumping problems. Our engineering force is at your command.

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Lawrence Machine & Pump Company
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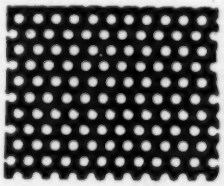
Perforated Metal Screens
For Pulp and Paper Mills

STEEL, COPPER, BRASS, BRONZE, MONEL METAL and other Alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.



".065" Round

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STANDARD-FLANGED-WOOD PIPE

Note: Flange Fits Flush
No Metal on Inside.
Pat. App. For

Changing the Piping of an entire Industry

It is true that Michigan Wood Pipe with Collar Flanges as illustrated is revolutionizing the Paper Mill Industry. Up to date Paper Mills are making the change as rapidly as possible. Some are changing entire Plant piping at once while others are changing line by line in order that production will not be held up.

The advantages are long life, no discoloration, power saving, larger capacity, light weight, easy to install, easy to take apart without damage, and cheaper.

Michigan Pipe Company, Bay City, Michigan

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FOR HIGH SPEED AND SEVERE SERVICE

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Giant Rag Cutters have capacities of from 1 to 5 tons per hour

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A MINE OF USEFUL INFORMATION Is Now Ready

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FOR eleven (11) years we have been retained by Managers, Superintendents, Chief Engineers, Chemical Engineers and other important men in the paper industry to negotiate new connections. All mill owners and officials know us and believe in us. Jacob Penn, Inc., 9 Park Place, New York. t.f.

IF YOU are open to overtures for new connection, and qualified for a salary between $2,500 and $25,000, your response to this announcement is invited. The undersigned provides a thoroughly organized service, of recognized standing and reputation, through which preliminaries are negotiated confidentially for positions of the calibre indicated. The procedure is individualized to each client's personal requirements; your identity covered and present position protected. Established twenty years. Send only name and address for details. R. W. Bixby, Inc., 117 Downtown Building, Buffalo, New York. tf.

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CONFIDENTIAL EMPLOYMENT SERVICE for paper mill men seeking positions. We have openings for chemists, technical men, beater engineers, machine tenders, boss machine tenders, production managers, salesmen, superintendents and color men and others. Send for our application blank. Paper Mill Dept., Chas. P. Raymond Service, 294 Washington St., Boston. D-26

WANTED—Graduate chemist for modern pulp and paper mill with several years experience. Address, Box 29-807, care Paper Trade Journal. J-2

WANTED—Chemist acquainted with sulphate pulp mill operations. State experience, education, salary expected, nationality, married or single. Submit references. Address, Box 29-808, care Paper Trade Journal. F-9

PACIFIC COAST BAG FACTORY needs experienced adjustor for Potdevin self-opening bag machines. Give age, full details of experience and salary desired. Address, Box 29-791, care Paper Trade Journal. J-2

SALESMAN—Experienced in the sale of manilla board, preferably a man who has had some mill experience. Address, Box 29-788, care Paper Trade Journal. D-26

WANTED—Draftsman for bag factory. Must have at least five years mechanical design experience and be familiar with bag machine design; position permanent. Give salary and all details past experience in first letter. Address, Box 29-811, care Paper Trade Journal. J-9

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COST AND ACCOUNTING EXECUTIVE, experienced in paper industry, would like position as head of cost and accounting department. Wide experience in cost and system work. Nine years with public accountants. Absolutely clear record. Salary about $5,000. Prefer eastern location. Address, Box 29-774, care Paper Trade Journal. D-26

ENGINEER—Mills planning extensions or improvements can obtain services from engineer with wide experience in the pulp and paper industry. References furnished. Address, Box 29-755, care Paper Trade Journal. D-26

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SUPERINTENDENT—Available about January 15th. 30 years experience on boxboards and specialties. 15 years as superintendent. Capable, energetic. Excellent record and references. Address, Box 29-785, care Paper Trade Journal. D-26

SITUATION WANTED AS MANAGER OR GENERAL SUPERINTENDENT, BY MAN WITH 15 YEARS PRACTICAL EXPERIENCE IN MANUFACTURE OF BOTH PULP AND PAPER. TWENTY YEARS EXPERIENCE IN THE MANAGEMENT OF MILLS. TECHNICALLY TRAINED. FIRST CLASS MILL ENGINEER. GOOD ORGANIZER AND GOOD EXECUTIVE ABILITY. SODA, SULPHATE AND SULPHITE EXPERT AND THEIR CONVERSION INTO BOND, BOOK, WRITINGS, NEWS AND KRAFT PAPERS. BEST REFERENCES FURNISHED AS TO ABILITY AND CHARACTER. ADDRESS, BOX 29-800, CARE PAPER TRADE JOURNAL. D-26

MILLWRIGHT-CARPENTER, with 18 years experience, 11 years as millwright foreman. Understand Jordan and beater filling and all kinds of repair work. Can read blue prints. Understand machine shop work. Wish a position as millwright foreman. Address, Box 29-810, care Paper Trade Journal. J-9

MILL CONNECTION WANTED—Capable experienced salesman desires mill connection. Years of experience. Willing to travel. Highest credentials as to ability and integrity. Address, Box 29-566, care Paper Trade Journal. t.f.

EXECUTIVE-SALESMAN: Age 34, experienced coarse and fine papers, now in New York City seeking mill connection. 10 years covering southern territory for large mill. Will cover any territory. Excellent past record. Address, Box 29-812, care Paper Trade Journal. J-2

SITUATIONS WANTED

YOUNG MAN OFFERS SERVICES in any capacity needed, to manager of wood supply for reputable paper mill. Experienced in practical pulpwood methods, and exceptionally qualified otherwise. Dependable, thorough, willing to learn. Would make first class personal assistant. Salary does not control. Best references. Address, Box 29-670, care Paper Trade Journal D-26

SUPERINTENDENT—Kraft and specialties; twisting cable filling; tissues, plain and creped, towels, napkins, all lines of creped paper products; converter crepes and waxing. Sixteen years experience. Best references. Address, Box 29-675, care Paper Trade Journal. D-26

ENGINEER, with many years experience in design, construction, maintenance and operation in pulp and paper mills, desires new connection. Address, Box 29-756, care Paper Trade Journal. D-26

EXECUTIVE STENOGRAPHER—SECRETARY: Capable young Christian woman, thoroughly acquainted paper business, wishes responsible position office New York City. Address, Box 29-771, care Paper Trade Journal. J-16

EXPERIENCED in paper specialty selling and familiar with Southern jobbing trade. Age twenty-six. Married. College man. Best references. Whitner Milner, 404 Candler Building, Atlanta, Ga. J-2

ENGINEER-MANAGER: Permanent position with good concern desired. Have seventeen years experience in manufacturing and sale of sulphate and sulphite pulps and papers. Address, Box 29-809, care Paper Trade Journal. J-23

BOARD MILL CONNECTION WANTED—Age 36; have over twenty years continuous practical experience in paper board business, embracing work in mill at start, followed by office routine to executive position, having charge of sales, purchasing and mill management. Actively engaged in sales end of the business past number of years. Open for position in any capacity affording an opportunity to prove my ability. Starting salary does not control. Highest references as to integrity and ability. Address, Box 29-726, care Paper Trade Journal. D-26

SUPERINTENDENT AT LIBERTY—Age 49 years. Have 35 years practical experience manufacturing book, bond, writings, envelope, news, color cover specialties, .009 straw corrugating. Good references and ability. Address, Box 29-804, care Paper Trade Journal. J-9

SUPERINTENDENT—Good executive and manufacturing experience in high grade mills making ledger, writing, envelope, seeks new connection. Good on colors. Address, Box 29-805, care Paper Trade Journal. D-26

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Shartle Brothers have that broad experience—a background of more than a third of a century of service. The excellence of Shartle products is based upon it. Shartle sales records like the following are traceable directly to it:

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MIDDLETOWN, OHIO
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SHARTLE BROTHERS
DIVISION OF THE BLACK-CLAWSON COMPANY

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PROCESS for production of Turpentine, having all characteristics of genuine spirits, from Sulphate turpentine by-product. Will demonstrate using your product. Sale—royalty—other arrangements. Address, Box 29-806, care Paper Trade Journal. D-26

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WANTED

WANTED—Odd lots, rejected or cull rolls of paper. W. A. Johns Paper Co., 2201 So. Union Ave., Chicago t.f.

WANTED—4 W. & P. Pulpers, 4 Filter Presses and 1 Rogers Wet Machine. Address, Box 27-285, care Paper Trade Journal. t.f.

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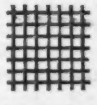

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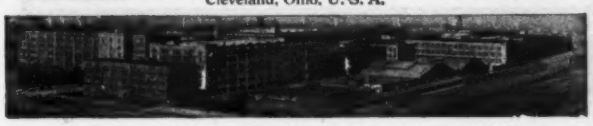

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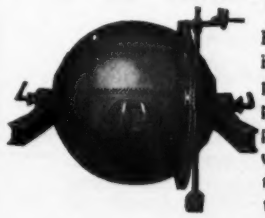
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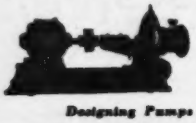
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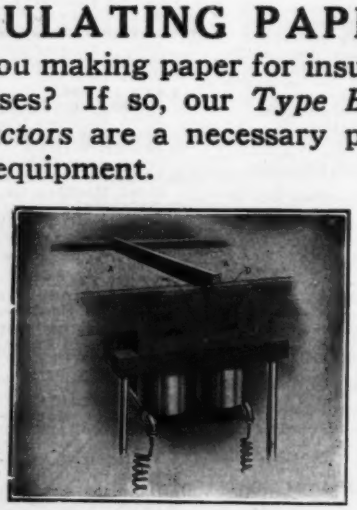

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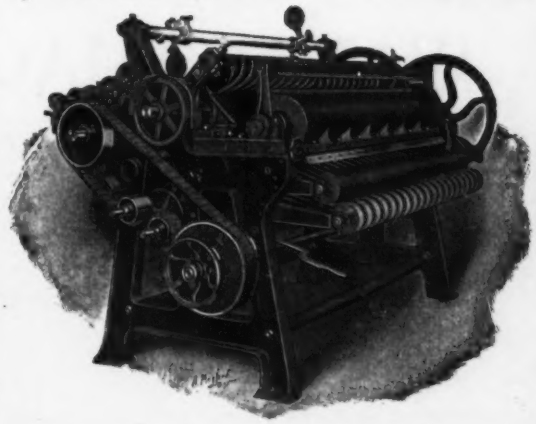

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Aktieselskabet Greaker Cellulosefabrik, Greaker Norway

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Scene in the plant of the Fraser Paper Co. Ltd., Madawaska, Maine, showing calender end of machine equipped with C-H Drive. This machine is controlled throughout by push buttons. Insert shows C-H Control Board.

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